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IN THE

Supreme Court of the United States

OFFICE OF THE CLERK

WYETH HOLDINGS CORPORATION,

Petitioner,

v.

THE UNIVERSITY OF COLORADO FOUNDATION, INC., THE UNIVERSITY OF COLORADO, THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, ROBERT H. ALLEN, AND PAUL A. SELIGMAN,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

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QUESTIONS PRESENTED

1. Whether the Patent Act, in which Congress has provided carefully crafted procedures and remedies for resolving inventorship disputes, preempts claims under state law that a patentee improperly made use of another's idea in obtaining a patent.

2. Whether the Patent Act authorizes courts to grant an individual who obtains patent rights through a correction of inventorship pursuant to 35 U.S.C. § 256 a remedy that differs from and exceeds the remedies available to all other patentees under federal patent law.

RULE 29.6 STATEMENT

On December 31, 2002, American Cyanamid Company changed its name to Wyeth Holdings Corporation. Wyeth Holdings Corporation is a wholly owned subsidiary of Wyeth.

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OPINIONS BELOW

The opinion of the Court of Appeals for the Federal Circuit is reported at 342 F.3d 1298 (App. 1a-24a). The district court opinions reviewed by the court of appeals are reported at 216 F. Supp. 2d 1188 (App. 25a-54a), 153 F. Supp. 2d 1231 (App. 55a-81a), and 105 F. Supp. 2d 1164 (App. 83a-133a). The Federal Circuit's decision resolving an earlier appeal in the same case and remanding to the district court for further consideration is reported at 196 F.3d 1366 (App. 135a-148a). The district court's opinions reviewed in that earlier court of appeals decision are reported at 974 F. Supp. 1339 (App.

149a-189a), 902 F. Supp. 201 (App. 191a-197a), and 880 F. Supp. 1337 (App. 199a-234a).

JURISDICTION

The judgment of the court of appeals was entered on September 3, 2003, (App. 1a-24a), and rehearing and rehearing en banc were denied on November 12, 2003 (App. 235a-236a). The jurisdiction of the court of appeals was based on 28 U.S.C. § 1295(a)(1). This Court's jurisdiction is invoked under 28 U.S.C. § 1254(1).

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

Article VI of the Constitution provides, in relevant part:

> This Constitution, and the Laws of the United States which shall be made in pursuance thereof . . . shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

35 U.S.C. § 256 provides:

> Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Director may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.
>
> The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Director shall issue a certificate accordingly.

INTRODUCTION AND STATEMENT

This case presents important questions regarding patent law preemption and the scope of proper remedies under the Patent Act. It is the latest in a series of recent decisions in which the Federal Circuit has allowed state tort law to encroach on federal patent law. At base, Respondents' state and federal claims turn on the allegation that Petitioner improperly made use of their idea *to obtain a patent*. By allowing Respondents to obtain relief despite the fact that Respondents concededly never complied with the substantive or procedural requirements for obtaining or challenging a patent, the Federal Circuit ignored clear principles this Court has established for patent law preemption, undermined the critical divide between federal patent law and state tort law, and granted a form of relief that Congress deliberately eliminated from patent law more than 50 years ago.

1. The inventorship dispute at the heart of this case concerns an improved formulation for Petitioner American Cyanamid's[1] prenatal multi-vitamin supplement marketed under the brand name "Materna." Petitioner filed a patent application covering the revised chemical composition, which improves absorption of iron by women who take the vitamin, in December 1981. App. 204a. A patent, numbered 4,431,634 ("'634 patent"), issued in February 1984. The patent, like the application, identified the sole inventor as Dr. Leon Ellenbogen, formerly Chief of Nutritional Science at Petitioner's Lederle Laboratories Division. App. 155a, 165a.

The dispute over the invention of the revised Materna vitamin centers on a series of studies carried out between 1979 and 1981 by Respondents Drs. Robert H. Allen and Paul A. Seligman ("Respondent doctors"), researchers at the

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[1] On December 31, 2002, American Cyanamid Company changed its name to Wyeth Holdings Corporation. At the time of the events in question, and throughout the decisions below, it was referred to as American Cyanamid. For ease of exposition, we follow that practice here.

Respondent University of Colorado. The studies began when Petitioner, through Dr. Ellenbogen, hired Respondent doctors to perform a study on the relative iron absorption characteristics of Materna and its chief competitor in the prenatal vitamin market. App. 156a-158a. Some of the later studies, like the first, were done with Petitioner's sponsorship; others, according to the district court, were done without Petitioner's direct sponsorship. App. 156a-164a. Altogether, Petitioner paid Respondent doctors $60,000 for work on studies of iron absorption from 1979 to 1981. *Id.*

During 1979-1981, Petitioner's chief nutritional scientist, Dr. Ellenbogen, and Respondent doctors communicated regularly concerning the studies and their implications for improving the absorption of iron from prenatal vitamins. By the time the studies were completed, Respondent doctors understood how petitioner intended to reformulate its product and supported Petitioner's plan to bring reformulated Materna to market. In September 1981, Respondent Dr. Allen wrote a letter to Dr. Ellenbogen stating, "I am pleased to grant permission to you and Lederle Laboratories to use and circulate the results of our studies concerning the absorption of iron from prenatal multivitamin-mineral supplements prior to their publication." App. 223a.

In October 1981, Petitioner held a press conference and issued press releases announcing Materna's new composition and describing the studies performed by Respondent doctors. Dr. Allen actively participated in Petitioner's press conference and in other efforts to promote the new product, including interviews with newspapers and radio stations. (App. 237a-243a) Thus, as the district court found and the court of appeals accepted, Respondent doctors "freely conveyed the results of the reformulation studies to Cyanamid, without restriction of any kind, but with the expectation that Cyanamid would use the information for its commercial benefit." App. 119a (internal quotation marks and citation omitted).

Although Respondent Dr. Allen was an experienced user of the patent system and the holder of several patents

(*see* App. 30a-31a), he never filed for a patent based on the 1979-1981 iron absorption studies.[2] Rather than seek to protect their putative invention, Respondent doctors made the results of their studies public at a medical conference and wrote an academic article based on their studies. They shared a draft with Dr. Ellenbogen and submitted the article to the *New England Journal of Medicine* in July 1981. It was rejected. They submitted a revised version to the *Journal of Obstetrics and Gynecology*, which published it in March 1983. App. 163a-164a.

2. In August 1993, nearly twelve years after Dr. Allen had assisted in the launch of the revised Materna vitamin, and nearly a decade after the '634 patent had issued, Respondents sued Petitioner in the United States District Court for the District of Colorado, claiming that Petitioner had improperly made use of their ideas in obtaining the '634 patent. They alleged eight claims for relief. Under Colorado law, they brought claims for conversion, fraud, misappropriation, breach of a confidentiality obligation, and unjust enrichment. They made federal claims for wrongful naming of inventors under 35 U.S.C. § 256, copyright infringement, and patent infringement. App. 199a-201a.[3]

After a bench trial on the fraud and unjust enrichment claims, the district court found Petitioner liable for "fraudulent nondisclosure" under Colorado law based on Dr. Ellen-

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[2] In addition, although Respondent University's patent policy required University researchers such as Respondent doctors to file a report on any discoveries that might be patentable, "[n]either Dr. Allen nor Dr. Seligman submitted the written disclosure mandated by the policy." App. 170a.

[3] On cross-motions for summary judgment, the district court granted judgment to Petitioner on the conversion, wrongful naming of inventors, misappropriation, and breach of confidentiality obligation claims. App. 210a, 220a, 229a-230a. The court granted judgment to Respondents on the copyright infringement claim (App. 226a-227a), but ultimately awarded no damages on that claim (*see* App. 181a-182a). Subsequently, the district court granted summary judgment to Petitioner on the patent infringement claim. App. 195a.

bogen's failure to inform Respondent doctors about the filing of the application for what became the '634 patent. App. 174a-175a. The district court also embraced Respondents' unjust enrichment claim, finding that the benefit conferred on Petitioner by Respondent doctors was "the use of the doctors' Studies to claim credit for inventing the reformulation and *to obtain a patent on it*." App. 176a (emphasis added). The court rejected Petitioner's argument that Respondents' state law claims were preempted by federal patent law. App. 179a-180a.

3. The Federal Circuit vacated the district court's judgment and remanded the case. App. 136a. It concluded that federal patent law did not preempt Respondents' state common law claims *per se*. But it determined that federal patent law did preempt "the district court's use of a state common law standard of inventorship to find that the Doctors were the inventors of the Materna reformulation." App. 139a. This reliance on state law was unacceptable, according to the Federal Circuit, because

> [a]n independent inventorship standard under state law would likely have different requirements and give rise to different remedies than federal patent law [and] [a] different state inventorship standard might [therefore] grant property rights to an individual who would not qualify as an inventor under federal patent law, or might grant greater relief to inventors than is afforded by federal patent law.

App. 142a. The Federal Circuit thus instructed the district court on remand to "apply federal patent law principles to determine whether the Doctors ... were inventors of the technology of the '634 patent" as an essential element of the state law claims. *Id.*

The Federal Circuit also concluded that the proper measure of damages on the fraudulent nondisclosure claim should be based on the value of the right to exclude under the patent. App. 143a-144a. Because "the record shows that the doctors intended to, and did, freely share their research results to allow Cyanamid to make and sell an improved Ma-

terna formulation," the appeals court concluded that, "even assuming that the Doctors were the sole inventors of the Materna reformulation ... the only financial opportunity that the University [plaintiffs] could have lost was the payment for an assignment of ownership rights in the '634 patent or a license from the University to sell the reformulated product at the time the patent issued." *Id.*

Finally, the Federal Circuit reversed the district court's grant of summary judgment to Petitioner on Respondents' wrongful naming of inventors claim. Contrary to the district court's conclusion, the appeals court noted that in an intervening decision it had recently held that § 256 of the Patent Act, 35 U.S.C. § 256, permits correction of the named inventors on patents even when the misnaming occurred because of deception. App. 145a-146a; *see Stark* v. *Advanced Magnetics, Inc.*, 119 F.3d 1551, 1555 (Fed. Cir. 1997).

4. On remand, the district court again found that Respondents were entitled to judgment on their fraudulent nondisclosure and unjust enrichment claims. App. 117a-121a. The court once again acknowledged that the University doctors had freely conveyed the results of their reformulation studies to Petitioner without restriction of any kind and with the expectation that Petitioner would use the results for commercial benefit. App. 119a. But the court considered this fact irrelevant to the soundness of the unjust enrichment claim. According to the district court, "[t]he unfair ... benefit secured by Cyanamid was *not* its use and manufacture of reformulated Materna, *but the right to exclude—through exercise of federal patent rights*" commercial rivals. *Id.* (underscored emphasis in original). Following the Federal Circuit's instruction, the district court also ordered the Patent Office to substitute Respondent doctors for Dr. Ellenbogen as the inventors in the '634 patent under 35 U.S.C. § 256. App. 121a-122a.

After a separate damages trial, the district court found that Respondents were entitled to equitable relief on the unjust enrichment claim equal to the profit Petitioner gained from having the Materna reformulation protected by pat-

ent—that is, an amount equal to the increase in profits from the ability to exclude generic competition until the end of 1994. That amounted to approximately $23 million. App. 45a-48a. With prejudgment interest, the award was more than $53 million. App. 53a-54a.[4] As an alternative holding, the court also found that the substitution of Respondent doctors as inventors on the '634 patent that it had ordered under § 256 of the Patent Act established Respondents' equitable title to the patent and thus provided a distinct federal law basis for ordering a disgorgement of Petitioner's patent-related profits. App. 52a-54a.

5. The Federal Circuit affirmed. *See* App. 1a-23a. The Federal Circuit rejected Petitioner's argument that the Patent Act preempted Respondents' state common law claims. App. 14a-17a. In addition, the Federal Circuit held that the district court had not abused its discretion in setting the measure of monetary relief at the amount of profits attributable to Petitioner's possession of the '634 patent. App. 19a-23a. In short, the court concluded that Petitioner improperly made use of Respondents' idea to obtain a patent, and, on that basis, upheld an award disgorging the profits that Petitioner earned as a result of the patent. Because the court of appeals affirmed the district court's unjust enrichment award, it found it unnecessary to address the measure of damages on the fraud claim or the § 256 action. App. 23a.

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[4] With respect to the claim for fraudulent nondisclosure, the court awarded an amount equal to an up-front payment of $100,000 and an exclusive license agreement for 6% of the value of Materna sales through the end of 1994, when Petitioner decided to stop enforcing the '634 patent—an amount that the district court concluded represented the loss suffered by the Respondents. *See* App. 27a-42a; *see also* App. 63a-70a. The court, however, went on to consider equitable remedies under the unjust enrichment claim because it determined that the measure of relief on that claim—the benefit conferred on Petitioner—might be greater than the loss suffered by Respondents.

REASONS FOR GRANTING THE PETITION

Petitioner seeks review because the decisions below: (1) conflict with principles this Court has established for patent law preemption; (2) raise issues of broad and general significance because the principles for patent law preemption they embrace will have destabilizing effects on patent law beyond the particular state causes of action addressed in this case, as other recent decisions by the Federal Circuit show; and (3) permit putative inventors to obtain remedies that Congress has never authorized under the patent laws.

The Federal Circuit's decision conflicts with principles this Court has established for patent law preemption in two crucial respects.

First, contrary to what this Court has repeatedly held, the Federal Circuit's decision allowed Respondents to gain "patent-like protection" under state law for "intellectual creations which would otherwise remain unprotected as a matter of federal law." *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 156 (1989). The Patent Act establishes clear methods for claiming property rights in inventions. When individuals deliberately avoid using the methods available under federal law, however, this Court has made plain that they cannot use state law as a substitute. Yet that is precisely what the Federal Circuit allowed Respondents—who never applied for a patent themselves—to do.

Second, Respondents' state law claims conflict with federal patent law, and are thus preempted, because they create remedies for a type of dispute for which the Patent Act itself establishes clear, exclusive remedies. The underlying dispute in this case turns on a fight over who was the true inventor of a new, commercially useful idea. In the Patent Act, Congress defined several vehicles—both administrative and judicial—for resolving such inventorship disputes—and Respondents made successful use of one such vehicle, an action for correction of named inventors under § 256 of the Patent Act. Allowing parties to use state common law actions to resolve inventorship disputes invites evasion of an

important part of the federal patent law system and creates a powerful new source of retrospective insecurity for patent rights—the threat of state tort liability long after patentees thought their rights had been established under the federal patent system.[5]

The district court's conclusion that comparable relief should be awarded under § 256 of the Patent Act, moreover, provides little comfort. Section 256 is, in fact, one of the statutorily authorized methods of ensuring that the proper parties are named in a patent. In approving the availability of retrospective monetary relief under § 256, however, the district court ignored both the plain language of the Patent Act and clear guidance from this Court about the remedies available in inventorship disputes and the relief available once a party has established its rights as a patentee. Rather than supporting the award in this case, § 256 demonstrates that Congress deliberately declined to provide precisely the type of relief that was awarded.

Most strikingly, if the Federal Circuit's decision in this case is allowed to stand, a substantial portion of all inventorship disputes under the Patent Act could be effectively supplanted by state unjust enrichment claims and the more generous remedies they offer.

I. THE FEDERAL CIRCUIT'S DECISION CONFLICTS WITH PRINCIPLES THIS COURT HAS ESTABLISHED FOR PATENT LAW PREEMPTION

A. The Decision Below Permits Individuals Who Deliberately Choose Not To Seek A Patent To Use State Law To Gain Patent-Like Protection

In the Patent Act, Congress has established clear standards and procedures for claiming property rights in inventions. It has also set clear standards for determining when inventors will be considered to have lost or abandoned their

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[5] Our preemption argument applies with equal force to Respondents' unjust enrichment claim, upon which the district court awarded Respondents relief, and to Respondent's fraudulent nondisclosure claim.

opportunity to claim property rights in their creations. Once individuals have abandoned such property rights, they should not be allowed to use state common law actions to gain the equivalent of (or more than) what they might have obtained if they had made use of the patent system in the first place. Otherwise, contrary to what this Court held in *Bonito Boats, Inc.* v. *Thundercraft Boats, Inc.*, 489 U.S. 141 (1989), and other cases, individuals will be able to gain "patent-like protection" under state law for "intellectual creations which would otherwise remain unprotected as a matter of federal law." *Id.* at 156.

In this case, Respondent doctors failed to follow the Patent Act's requirements for claiming property rights in the chemical formulations ultimately covered by the '634 patent. Indeed, by their conduct they disavowed any claim to such property rights. Yet, more than a decade after they had declined to take advantage of the benefits of the patent system, they decided to use state common law to reap the financial gains that flow from the exclusivity of patent protection. This Court's decisions make clear that such end-runs around the patent system, approved in this instance by the court of appeals, "'stand[] as an obstacle to the accomplishment and execution of the full purposes and objectives'" of federal patent law, *Aronson* v. *Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979) (quoting *Hines* v. *Davidowitz*, 312 U.S. 52, 67 (1941), and thus, by virtue of the Supremacy Clause, are preempted.

1. The Patent Act creates well-known criteria and methods for establishing property rights in inventions. But the "opportunity to obtain a property right in an idea ... create[d by] the federal patent scheme [is] limited." *Bonito Boats*, 489 U.S. at 149. Thus, the Patent Act also makes clear that, when individuals fail to meet the criteria and follow the methods established by it, they forfeit their opportunity to claim such property rights. *See, e.g., Brown* v. *Duchesne*, 60 U.S. 183, 195 (1856) ("an inventor has no right of property in his invention, upon which he can maintain a suit, unless he obtains a patent for it, according to the acts of

Congress; . . . his rights are to be measured and regulated by these laws, and cannot go beyond them").

In order for an invention to be patentable, it must meet the statutory requirements of novelty, usefulness, and nonobviousness. *See* 35 U.S.C. §§ 101, 102, 103; *see generally Graham* v. *John Deere Co.*, 383 U.S. 1, 12-13 (1966). Hence, if "the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States," 35 U.S.C. § 102(b), it is not patentable. Similarly, receipt of a patent is barred when the inventor "has abandoned the invention." 35 U.S.C. § 102(c).

Thus, under the publication bar, "[p]ublication without seasonable application for patent protection . . . operates as a constructive abandonment." *Pickering* v. *Holman*, 459 F.2d 403, 407 (9th Cir. 1972). And, under the actual abandonment bar, an inventor "may forfeit his rights as an inventor by a willful or negligent postponement of his claims." *Kendall* v. *Winsor*, 62 U.S. 322, 329 (1859); *see Consolidated Fruit-Jar Co.* v. *Wright*, 94 U.S. 92, 95-97 (1877). Likewise, under the public use and on-sale bars, an inventor's "voluntary act or acquiescence in the public sale [or] use [of the invention for more than one year] is an abandonment of his right." *Pennock* v. *Dialogue*, 27 U.S. 1, 24 (1829); *see also, e.g.*, *Shaw* v. *Cooper*, 32 U.S. 292, 320 (1833); *Egbert* v. *Lippmann*, 104 U.S. 333, 337-338 (1882). Together, these statutory bar requirements ensure that "[v]igilance is necessary to entitle an individual to the privileges secured under the patent law. It is not enough, that he should show his right by invention, but he must secure it in the mode required by law." *Shaw*, 32 U.S. at 319.

2. As the court of appeals noted, "the [Respondent] Doctors made no attempt to patent the Materna reformulation." App. 140a. Indeed, by their conduct, Respondent doctors clearly abandoned their right to claim patent protection for the method of improving iron uptake embodied in the reformulated Materna pill.

Respondent doctors readily acquiesced in—indeed, they assisted—Petitioner's widespread public and commercial use of the results of their experiments in the sale of the revised Materna pill marketed in the fall of 1981. In September 1981, Respondent Dr. Allen wrote a letter to Dr. Ellenbogen, then Chief of Nutritional Science at Petitioner's Lederle Laboratories Division, stating, "I am pleased to grant permission to you and Lederle Laboratories to use and circulate the results of our studies concerning the absorption of iron from prenatal multivitamin-mineral supplements prior to their publication." App. 223a. In October 1981, when Petitioner held a press conference and issued press releases announcing Materna's new composition, Respondent Dr. Allen actively participated in the press conference. *See* App. 163a-164a. And he freely took part in other efforts to promote the new product as well, including interviews with newspapers and radio stations. *See* App. 237a-243a. Thus, as the court of appeals concluded in its initial decision, "the record shows that the doctors intended to, and did freely share their research results to allow [Petitioner] to make and sell an improved Materna formulation." App. 143a.

Moreover, from the summer of 1981, Respondent doctors sought to publish an article based on their studies, in the fall of 1981 they made the results of the studies public at a medical conference, and in March of 1983 their article appeared in a widely circulated medical journal. App. 163a-164a. Yet, at no point in time, let alone within the one-year grace period established by the Patent Act, did the Respondent doctors attempt to secure patent protection on what more than a decade later they would claim was their invention. Instead, they showed an "utter neglect" of their invention for a decade before belatedly asserting claims under state common law. *Consolidated Fruit-Jar Co.*, 94 U.S. at 95.

Hence, at the time they filed suit, it is clear that Respondent doctors would have been barred under the Patent Act from acquiring a patent on the revised chemical compositions for prenatal vitamins suggested by their studies and

equally barred from reaping the financial benefits of patent ownership.

3. Yet, through the state law causes of action permitted by the lower courts Respondents were able to gain the full financial rewards they might have received through patent ownership—in fact, more than they could have achieved through patent ownership. Thus, the fraudulent nondisclosure and unjust enrichment awards gave them "patent-like protection" at a time when any opportunity Respondents might once have had to obtain patent rights had been forfeited, a result that is incompatible with the goals of the federal patent scheme, *see Bonito Boats*, 489 U.S. at 156.

As the court of appeals observed, Respondents have "never been in the business of manufacturing or marketing prenatal vitamins." App. 143a. Thus, if Respondent doctors had applied for the '634 patent as the sole inventors of its subject matter, they could have negotiated with Petitioner (or any other manufacturer of their choosing) a "payment for an assignment of ownership rights in the '634 patent or a license from the University to sell the reformulated product at the time the patent issued." App. 145a-146a. The district court, in determining the amount of damages on Respondent's fraudulent nondisclosure claim, used just this measure. It found that Respondents were entitled to "the reasonable royalty the University could have secured in negotiations with Cyanamid in late 1981 for an exclusive license from the University of the '634 Patent technology." App. 37a.

Significantly, with respect to the unjust enrichment claim, the district court went even further in granting a form of relief that transferred the benefit of the patent from Petitioner to Respondents. It awarded Respondents an amount equal to what it found was the portion of Petitioner's profits from Materna sales during the effective life of the '634 patent that were attributable to "the right to exclude generic competition gained from the '634 Patent (the Patent-related profits)." App. 45a.

By placing Respondents in nearly the same position they would have been in if they had patented and licensed their invention in the first place—indeed, in a more favorable position—the district court's award has enabled them to use state law to gain "patent-like protection" for an idea for which they had forfeited any claim to federal patent protection. *Bonito Boats*, 489 U.S. at 156. That is precisely what this Court has said the preemptive effect of the Patent Act does not allow.

In addition, allowing such state law causes of action creates a powerful new source of retrospective insecurity for patent rights—the threat of state tort or unjust enrichment liability long after patentees thought their rights had been established under the federal patent system.

4. The court of appeals refused to find preemption because, in its view, "[t]he right ... compensated for under a theory of unjust enrichment ... is not 'patent-like' at all" because "'the unjust enrichment claim springs not from an attempt to enforce intellectual property rights, but instead from Cyanamid's alleged wrongful use of the Doctors' research results.'" App. 12a (quoting *University of Colorado Foundation, Inc.* v. *American Cyanamid Co.*, 196 F.3d 1366, 1371-1372 (Fed. Cir. 1999)).

That assertion, however, cannot be squared with the court of appeals' own earlier decision in this case vacating the district court's judgment precisely because it found Respondents' state law claims must be at least partially preempted. Noting that Respondents' "fraudulent nondisclosure and unjust enrichment claims depend on the Doctors' status as inventors," the court of appeals determined that the state law standard of inventorship upon which the district court had relied must be displaced by a federal standard:

> An independent inventorship standard under state law would likely have different requirements and give rise to different remedies than federal patent law. A different state inventorship standard might grant property rights to an individual who

> would not qualify as an inventor under federal patent law, or might grant greater relief to inventors than is afforded by federal patent law. Either situation might frustrate the dual federal objectives of rewarding inventors and supplying uniform national patent law standards.
>
> The federal Patent Act leaves no room for states to supplement the national standard for inventorship.

App. 142a.

If, as the court of appeals acknowledged, an unjust enrichment claim relying on a state inventorship standard would "grant property rights" to the individuals who make use of it, an unjust enrichment claim relying on a federal inventorship standard would just as clearly "grant property rights" to the plaintiff/inventors who make use of it. App. 142a. And the property rights in question are, as the court of appeals pointed out, the rights to which an individual who "qualif[ies] as an inventor under federal patent law" is entitled. *Id.* The Federal Circuit determined that by inserting a federal inventorship standard into the state unjust enrichment cause of action, it would avoid any conflict with federal patent law. But Respondents' state law claims, in their revised forms, have the effect of granting "property rights" to those who the court finds qualify as inventors under the Patent Act and of enabling them to reap the full financial rewards of patent ownership. App. 141a-142a. State law causes of action that provide such benefits plainly give "patent-like protection" to plaintiffs, such as Respondent doctors, who take advantage of them. *Bonito Boats*, 489 U.S. at 156. When state law causes of action provide such benefits, as in this case, to individuals whose "intellectual creations . . . would otherwise [have] remain[ed] unprotected as a matter of federal law," *id.*, they must be preempted.

The court of appeals' partial preemption holding makes plain an important aspect of this case. This is not a case in which plaintiffs sought a state law remedy for theft of an idea. It is undisputed, as the court of appeals noted (*see*

App. 143a), that Respondents freely shared their ideas with Petitioner in the expectation that Petitioner would use those ideas for commercial gain. Respondents' state law claims sought relief for—and the courts below measured both the damages and the disgorgement to which they held Respondents were entitled by reference to—Petitioner's use of Respondents' ideas *to acquire a patent* and the right of exclusivity that ownership of the patent conferred. It is the acquisition of patent rights, rights defined in every respect by federal law, that grounds Respondents' state law claims.[6]

5. Moreover, while this Court has recognized that state law regulation affecting intellectual property is permissible in certain clearly defined contexts, those contexts are different in several material respects from the situation here. Most significantly, the state claims in those cases did not rest on a determination of inventorship or patent rights, as Respondents' concededly do. In addition, those claims turned on some form of marketplace injury suffered by the plaintiffs, a factor not involved here since Respondent doctors conceded that they had no interest in commercially exploiting the results of their studies. By contrast, in *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470 (1974), where this Court upheld state trade secret laws against patent preemption, the company seeking trade secret protection had entered into contracts with the offending employees in which they had expressly agreed to maintain the confidentiality of the information in question. *Id.* at 473. And, in *Aronson* v. *Quick Point Pencil Co.*, 440 U.S. 257 (1979), where this Court approved enforcement of an indefinite royalty agreement for a device that turned out to be unpatentable, the parties had assumed "contractual obligations, freely undertaken in arms-length negotiation." *Id.* at 266. Permitting enforcement of such state laws involves far less danger of

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[6] Nor can Respondents contend that their state law claims rested on the mere copying of portions of Respondent doctors' manuscript, an issue that was separately addressed and resolved (in their favor) by their copyright infringement claim.

intrusion on federal patent policy than does allowing causes of action (1) where the parties themselves have not agreed upon any protection for their ideas, and, indeed, have freely shared those ideas, and (2) where the courts may find an implied protection on the proper use of ideas whenever they believe it would be "unjust" not to do so.

B. The Decision Below Encourages Individuals To Avoid The Patent Act's Well-Established Methods For Resolving Inventorship Disputes In Favor Of State Law Litigation

Respondents' state law claims not only give "patent-like protection" in circumstances in which Respondents deliberately forfeited patent protection, *Bonito Boats*, 489 U.S. at 156, they also create remedies for a type of dispute for which the Patent Act itself creates clear, exclusive remedies. Even if it would be permissible to allow a state law action to remedy conduct of the sort at issue here in the face of statutory silence, it cannot be permissible when the Patent Act itself addresses the problem. As this Court has noted in a different context with respect to state law remedies designed to protect federal rights, "conflict is imminent whenever two separate remedies are brought to bear on the same activity, . . . conflict in technique can be fully as disruptive to the system Congress erected as conflict in overt policy." *Wisconsin Dep't of Industry, Labor & Human Relations* v. *Gould Inc.*, 475 U.S. 282, 286 (1986) (internal quotation marks and citations omitted).

1. The Patent Act creates well-marked paths for resolution of inventorship disputes, that is, cases where one or more individuals believe they unfairly have been denied recognition as the inventors of a new technology.

a. Interference proceedings are "[t]he established procedure for resolving inventorship contests." 1 *Chisum on Patents* § 2.04[7][a], at 2-96 (2003); *see* 37 C.F.R. § 1.601(i). Such proceedings are held at the Patent Office (when one or

more patent application is involved), *see* 35 U.S.C. § 135,[7] or in the courts (when all parties have issued patents), *see* 35 U.S.C. § 291.[8] Interference proceedings may be used to resolve "any question of patentability and priority of invention between two or more parties claiming the same patentable invention." 37 C.F.R. § 1.601(i). Interference proceedings are appropriate vehicles not only for raising claims of simple priority, but also for making accusations of fraud and deceit. *See, e.g., Precision Instrument Mfg. Co.* v. *Automotive Maintenance Mach. Co.*, 324 U.S. 806, 818-819 (1945).

Under the patent laws, putative inventors, like Respondents, may protect whatever claim to patent rights they might have by promptly filing a patent application. In this manner, they can determine whether any other party has sought to patent the same idea, and can protect their inter-

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[7] Section 135(a) provides:

> Whenever an application is made for a patent which, in the opinion of the Director, would interfere with any pending application, or with any unexpired patent, an interference may be declared and the Director shall give notice of such declaration to the applicants, or applicant and patentee, as the case may be. The Board of Patent Appeals and Interferences shall determine questions of priority of the inventions and may determine questions of patentability. Any final decision, if adverse to the claim of an applicant, shall constitute the final refusal by the Patent and Trademark Office of the claims involved, and the Director may issue a patent to the applicant who is adjudged the prior inventor. A final judgment adverse to a patentee from which no appeal or other review has been or can be taken or had shall constitute cancellation of the claims involved in the patent, and notice of such cancellation shall be endorsed on copies of the patent distributed after such cancellation by the Patent and Trademark Office.

[8] Section 291 provides:

> The owner of an interfering patent may have relief against the owner of another by civil action, and the court may adjudge the question of the validity of any of the interfering patents, in whole or in part. The provisions of the second paragraph of section 146 of this title shall apply to actions brought under this section.

ests, by ensuring that, if so, the Director of the Patent Office would declare an interference. Respondents, however, failed to do so.

b. Respondent doctors also could have sought to provoke Petitioner to undertake an infringement action by convincing another manufacturer to make and sell a prenatal vitamin based on the results of the 1979-1981 studies or by identifying and seeking to work with one who was doing so. *See* 35 U.S.C. § 281. The defense to the infringement claim would then have served as a method for vindicating their contention that Dr. Ellenbogen was not the true inventor of the subject of the '634 patent and for invalidating Petitioner's patent under § 102(f).

c. The Patent Act affords individuals in Respondent doctors' position yet a third avenue for challenging Petitioner's patent rights. Under the reexamination process added to the Patent Act in 1980, *see* Pub. L. No. 96-517, § 1, 94 Stat. 3015, 3015-3016 (1980) (codified at 35 U.S.C. §§ 301-307), "any person at any time," 35 U.S.C. § 301, may request that the Patent Office reexamine a patent based on prior art revealed in patents or printed publications.[9] To the extent that individuals in Respondent doctors' position could have demonstrated priority of invention based on a printed publication such as the abstract they published for use at a scientific conference in the fall of 1981, the publication would "have a bearing on the patentability of" the challenged patent under §§ 102(a), 102(g)(2) or 102(f), 35 U.S.C. § 301; *see Manual of Patent Examining Procedure* § 2217 (8th rev. ed. 2003) , and therefore could be used to question the validity of the challenged patent. The reexamination process was designed to "strengthen 'investor confidence in the certainty of patent rights'" while reducing litigation by "creating a sys-

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[9] The Patent Office has defined "any time" to mean "any time during the period of enforceability of the patent," 37 C.F.R. § 1.501, thus, up to 23 years, the patent term of 17 years plus the six years of the limitation period on infringement actions, *see Manual of Patent Examining Procedure* § 2204 (8th rev. ed. 2003).

tem of administrative reexamination of doubtful patents.'" 4 *Chisum on Patents* § 11.07[4], at 11-386 to 11-387 (quoting H.R. Rep. No. 96-1307, at 3). Although reexamination would, at most, have deprived Petitioner of its patent, and could not have *created* any patent rights in Respondents' favor, Respondents never applied for a patent, and thus can hardly complain that they would not have received the substantial financial windfall that they received in the judgment below.

d. Finally, § 256 of the Patent Act enables individuals in Respondents' position to assert their claims to being the rightful creators of an invention and to be added or substituted on an issued patent.[10] As the Federal Circuit has explained, "Section 256 of title 35 provides a cause of action for judicial correction of inventorship." *Chou* v. *University of Chicago*, 254 F.3d 1347, 1357 (Fed. Cir. 2001); *see Stark* v. *Advanced Magnetics, Inc.*, 119 F.3d 1551, 1554-1556 (Fed. Cir. 1997). Indeed, Respondents successfully made use of that cause of action here and were ordered substituted as the named inventors on the '634 patent.

2. Allowing state law causes of action to serve as vehicles for resolving inventorship quarrels invites evasion of the system of procedures and remedies for inventorship claims created by Congress in the Patent Act itself. The relief available may, as in this case, be much more generous than that permitted under the Patent Act. The Act confines individuals to invalidating patents from which inventors improperly have been omitted or substituting the challenger as the inventor. Thus, allowing such state law causes of action creates a powerful incentive to forgo or supplement the Patent Act's own methods for resolving inventorship disputes. Indeed, the court of appeals appeared to recognize as much in its earlier decision in this case, when it correctly observed that a state law standard that "might grant greater relief to inventors than is afforded by federal patent law . . . might

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[10] For the text of § 256, see *supra* p. 2.

frustrate the dual federal objectives of rewarding inventors and supplying uniform national patent law standards." App. 142a. For those very reasons, Respondents' state law claims must be preempted by federal law.[11]

3. In addition, allowing state law causes of action in these circumstances creates two further risks of distortion in the federal patent system designed by Congress. First, by opening up new sources of state law liability for claims of erroneous inventorship, it throws a new shadow of retrospective insecurity over the property rights of vast numbers of patentees. The Federal Circuit's decision invites individuals to try to use state law to attack holders of existing patents and either win patent rights or at least gain the financial rewards of patent exclusivity. Second, Respondents relied upon, and obtained relief, under § 256 substituting them for Petitioner under the '634 patent. State law cannot, and should not, provide a remedy that goes beyond that which Congress provided in the Patent Act.

C. The Principles Of Patent Law Preemption Embraced By Federal Circuit Will Have Destabilizing Effects On Patent Law Beyond The Particular State Causes Of Action Addressed In This Case, As Other Decisions By The Federal Circuit Show

The Federal Circuit's decision in this case is not a single aberration, but rather the latest installment in a series of Federal Circuit decisions declining to find that state law causes of action, which offer alternative remedies for what are essentially federal patent claims, are preempted by federal law.

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[11] Discrepancies between state law procedures and those specified by Congress in the Patent Act—for example, the one-year limit on interferences, *see* 35 U.S.C. § 135(b), which plainly was not satisfied here—also illustrate how allowing state law causes of action of the kind permitted here enable individuals whose claims rely directly on the establishment of patent rights to evade the careful system of remedies established by Congress in the Patent Act.

In *Dow Chemical Co.* v. *Exxon Corp.*, 139 F.3d 1470 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1138 (1999), the Federal Circuit permitted a state tortious interference with contract claim to stand even though the claim was "premised on an assertion of inequitable conduct in the procurement of [a] patent." *Id.* at 1480 (Lourie, J., dissenting). In that case, as in this one, the state cause of action should have been "preempted because it frustrates federal patent policy by providing damages ... distinct from the remedies established under federal law." *Id.* Similarly, in *Hunter Douglas, Inc.* v. *Harmonic Design, Inc.*, 153 F.3d 1318 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1143 (1999), the Federal Circuit vacated the district court's finding that several state tort causes of action were preempted and remanded with instructions to reconsider. Following a path of reasoning similar to the one it followed here, the court endorsed the result and reasoning in *Dow Chemical*. *Id.* at 1332-1337

Thus, the decision in this case also warrants review because it rests on reasoning that has already driven a series of Federal Circuit decisions refusing to find state causes of action preempted and that will inevitably fuel further decisions erroneously restricting the scope of federal patent preemption.

II. THE DISTRICT COURT ERRED IN FINDING AS AN ALTERNATIVE GROUND FOR ITS JUDGMENT THAT SUBSTITUTION OF AN INVENTOR UNDER 35 U.S.C. § 256 ENTITLES THE SUBSTITUTED INVENTOR TO RETROSPECTIVE MONETARY RELIEF

As an alternative ground for its judgment, the district court held that under § 256 of the Patent Act Respondents were entitled to the same disgorgement of patent-related profits that the court ordered based on their state unjust enrichment claim. Because the availability of such relief under § 256 raises a discreet, novel, and important legal issue under the Patent Act, this Court's review is warranted. Alternatively, the Court may wish to remand the question to the Federal Circuit for it to consider the matter in the first instance.

Following the instruction of the Federal Circuit on remand, the district court held that Respondent doctors were entitled to be substituted for Dr. Ellenbogen as the inventors named in the '634 patent pursuant to 35 U.S.C. § 256. App. 121a-122a. The district court also held that the University therefore held equitable title in the '634 patent. App. 122a. The court rejected Respondents' contention that Petitioner owed any fiduciary duties to Respondents requiring imposition of a constructive trust on Petitioner's patent-related profits, but it nonetheless held that the University's acquisition of equitable title to the '634 patent through § 256 substitution "constitutes a separate and independent ground for requiring [Petitioner] to disgorge to [Respondents]" the patent-related profits on the revised Materna vitamin. App. 52a-53a; 80a.

The district court's alternative ground for judgment is at odds with the plain language of the Patent Act and over a century of settled precedent of this Court.[12]

As an initial matter, it is well established that in order to claim money damages for patent infringement, a plaintiff must meet two prerequisites: first, it is not enough to hold merely equitable title to the patent—legal title is required;

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[12] Although the Federal Circuit found it unnecessary to pass upon this question in light of its affirmance of the district court's unjust enrichment award, the question was clearly pressed below. *See The University of Colorado Foundation, Inc.* v. *American Cyanamid Co.*, No. 02-1587, Brief for Defendant-Appellant American Cyanamid Co. 46; *The University of Colorado Foundation, Inc.* v. *American Cyanamid Co.*, No. 02-1587, Brief for Plaintiffs-Appellees 61-62; *The University of Colorado Foundation, Inc.* v. *American Cyanamid Co.*, No. 02-1587, Reply Brief for Defendant-Appellant 27-28; *The University of Colorado Foundation, Inc.* v. *American Cyanamid Co.*, Nos. 97-1468, 98-1113, Brief of Plaintiffs/Cross-Appellants 49; *The University of Colorado Foundation, Inc.* v. *American Cyanamid Co.*, Nos. 97-1468, 98-1113, Reply and Opposition Brief of Defendant-Appellant American Cyanamid Company 33-35. That is sufficient to bring it before this Court. *See, e.g., Verizon Communications Inc.* v. *FCC*, 535 U.S. 467, 530 (2002) ("Any issue 'pressed or passed upon below' by a federal court is subject to this Court's broad discretion over the questions it chooses to take on certiorari") (citation omitted).

second, the plaintiff must have held legal title during the period for which damages are claimed. As this Court explained long ago: "The law as to who should bring a suit at law for damages for infringement of a patent is clearly and correctly stated . . . : [the] plaintiff . . . must be the person or persons in whom the *legal title* to the patent resided *at the time of the infringement.*" *Crown Die & Tool Co.* v. *Nye Tool & Mach. Works*, 261 U.S. 24, 40-41 (1923) (emphasis added) (internal quotation marks and citation omitted); *cf. Peters Patent Corp.* v. *Bates & Klinke, Inc.*, 295 U.S. 392, 394 (1935); *Waterman* v. *Mackenzie*, 138 U.S. 252, 255 (1891); *see also, e.g., Rite-Hite Corp.* v. *Kelley Co.*, 56 F.3d 1538, 1551 (Fed. Cir. 1995).

Some courts have recognized that the holder of equitable title in a patent may seek at least some forms of equitable relief for infringement of the patent. *See, e.g., Arachnid, Inc.*, v. *Merit Indus., Inc.*, 939 F.2d 1574, 1579-1580 (Fed. Cir. 1991). But the decision upon which Respondents principally relied below refused to grant such relief, and the other precedents discussed in that decision either denied relief or granted only injunctive relief.[13] Neither the district court nor Respondents cited a single case in which an equitable title holder gained retrospective monetary relief—a result that would be difficult to reconcile with this Court's clear direction that damages are available only after the plaintiff has obtained legal title to the patent.

Neither § 256 nor any other provision in the Patent Act provides for monetary relief for equitable title holders. Indeed, § 256 expressly defines the relief available in a § 256

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[13] In *Papazian* v. *American Steel & Wire Co.*, 155 F. Supp. 111 (N.D. Ohio 1957), the court held that no equitable relief was appropriate. In the two cases cited in *Arachnid, Inc.* in which the court granted equitable relief, the relief was an injunction against further infringement. Those cases involved copyrights, not patents, and so have limited relevance to remedies under § 256 of the Patent Act. *See Wooster* v. *Crane & Co.*, 147 F. 515 (8th Cir. 1906); *Southern Music Publ'g Co.* v. *Walt Disney Prods.*, 73 F. Supp. 580 (S.D.N.Y. 1947).

action as an "order correct[ing] . . . the patent." 35 U.S.C. § 256.[14] It is not the role of the courts to add additional remedies to those defined by Congress. As this Court has often noted, "Congress expresses its purpose by words. It is for us to ascertain—neither to add to nor to subtract, neither to delete nor to distort." *62 Cases, More or Less* v. *United States*, 340 U.S. 593, 596 (1951); *see Board of Educ.* v. *Rowley*, 458 U.S. 176, 190 (1982).

When Congress wanted to provide for monetary remedies in the Patent Act, it was perfectly capable of doing so. The Act authorizes damages for patentees who succeed in infringement actions. *See* 35 U.S.C. § 281. But, as the cases discussed above show, those damages are available only to those who hold legal title to a patent. The Patent Act also authorizes one form of equitable relief, namely, the granting of injunctions to "prevent the violation of any right secured by patent." *Id.* § 282. But, even with respect to patentees suing for infringement, Congress deliberately eliminated disgorgement of profits as a remedy more than 50 years ago. *See Aro Mfg. Co.* v. *Convertible Top Replacement Co.*, 377 U.S. 476, 505 (1964). And the Act nowhere permits the granting of disgorgement of profits or any other sort of retrospective monetary relief to equitable title holders. As this Court has long recognized, because patent rights are creatures of federal statute, the courts must be particularly careful not to expand on the contours of the rights and remedies established by Congress. "The monopoly . . . is created by the act of Congress; and no rights can be acquired in it unless authorized by statute, and in the manner the statute prescribes." *Gayler* v. *Wilder*, 51 U.S. 477, 494 (1851); *see Crown Die & Tool Co.*, 261 U.S. at 40.

Moreover, the restriction of equitable titleholders to prospective relief coheres with the larger system of rights

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[14] When the Director of the PTO, rather than a court, hears a claim under § 256, the relief the Director may give is similarly defined as the "issu[ance] of a certificate correcting such error." 35 U.S.C. § 256.

and remedies established in the Patent Act. As this case illustrates, if retrospective monetary awards of the sort endorsed by the district court here are permitted, holders of equitable title in patents would be able to claim greater financial awards than holders of legal title in patents are able to do. For while legal titleholders may sue for infringement damages, those damages may well be less than the disgorgement of profits permitted under the district court's theory of equitable infringement. The potential privileging of equitable titleholders that the district court's holding would allow runs contrary to the Patent Act's longstanding emphasis on the importance of the patent certificate and the legal title it conveys.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted,

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FEBRUARY 2004

APPENDICES

APPENDIX A

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

THE UNIVERSITY OF COLORADO FOUNDATION, INC., THE UNIVERSITY OF COLORADO, THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, ROBERT H. ALLEN, AND PAUL A. SELIGMAN, PLAINTIFFS-APPELLEES,

V.

AMERICAN CYANAMID COMPANY, DEFENDANT-APPELLANT.

No. 02-1587

DECIDED: Sept. 3, 2003
Rehearing and Rehearing En Banc Denied Nov. 12, 2003*

[342 F.3d 1298]

Before RADER, BRYSON, and GAJARSA, Circuit Judges.

GAJARSA, Circuit Judge.

Drs. Robert H. Allen and Paul A. Seligman (collectively, "the Doctors") developed an idea to reformulate a prenatal multivitamin/mineral supplement. The Doctors described their idea in a confidential manuscript to American Cyanamid Company's ("Cyanamid's") Chief of Nutritional Science, Dr. Leon Ellenbogen, who copied parts of that manuscript to obtain U.S. Patent No. 4,431,634 ("the '634 patent"). The United States District Court for the District of Colorado held, *inter alia*, Cyanamid liable for fraudulent nondisclosure and unjust enrichment. *Univ. of Colo. Found., Inc. v.*

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* Schall, Circuit Judge, did not participate in the vote.

Am. Cyanamid Co., 216 F.Supp.2d 1188 (D.Colo.2002) ("*Cyanamid V*"). In addition to compensatory damages, the district court awarded exemplary damages of $500,000 to each of the Doctors. Because the district court did not err in its determination of unjust enrichment and calculation of damages, we affirm.

[1301] I. BACKGROUND

A. *The Patented Claims*

We briefly revisit the long and storied history of this litigation[1] as a preface to the discussion of the issues on appeal. Our recitation of the facts is based on the findings made by the district court after trial.

Prenatal supplements containing 60-65 mg of iron are widely used to ensure that pregnant women absorb the approximately 3.5 mg of supplemental iron per day they require because iron deficiency is a serious concern for pregnant and lactating women. Cyanamid's Lederle Laboratories manufactures and markets Materna 1.60 ("Materna"), a

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[1] *Univ. of Colo. Found., Inc. v. Am. Cyanamid*, 880 F.Supp. 1387 (D.Colo.1995) (*Cyanamid I*) (rejecting, as a matter of law, plaintiffs' common law claim of conversion as well as plaintiffs' claim for correction of patent under 35 U.S.C. § 256, but finding plaintiffs had standing to pursue claims for equitable title/relief under the Patent Act); *Univ. of Colo. Found., Inc. v. Am. Cyanamid Co.*, 902 F.Supp. 221 (D.Colo.1995) (*Cyanamid II*) (agreeing with Cyanamid, on reconsideration of *Cyanamid I*, that plaintiffs' equitable title claim must fall with claim for relief under § 256 of Patent Act); *Univ. of Colo. Found., Inc. v. Am. Cyanamid Co.*, 974 F.Supp. 1339 (D.Colo.1997) (*Cyanamid III*) (finding in favor of plaintiffs and against Cyanamid on plaintiffs' claims for fraudulent nondisclosure and unjust enrichment and awarding approximately $45 million in damages); *Univ. of Colo. Found., Inc. v. Am. Cyanamid Co.*, 196 F.3d 1366 (Fed.Cir.1999) (*Cyanamid IV*) (vacating the liability judgments against Cyanamid because the district court did not use the federal standard for determining inventorship of the '634 patent).

prenatal multivitamin/mineral supplement containing 60 mg of iron.

In 1979, Stuart Pharmaceutical, the manufacturer of a competing prenatal supplement Stuartnatal 1+1 ("Stuartnatal"), began advertising that its product provided superior iron absorption to that of Materna. To refute these claims and protect Cyanamid's market share,[2] Dr. Ellenbogen asked his friend and long-time professional colleague, Dr. Allen, a professor of medicine, professor of biochemistry, and Director of hematology at the University of Colorado Health Sciences Center, if he would be interested in performing a study to compare the iron absorption in women of Stuartnatal to that of Materna. Dr. Allen together with his colleague Dr. Seligman, a hematologist and professor of medicine at the University of Colorado Health Sciences Center, conducted the comparison study ("Study I") in the summer of 1979.

Study I, which determined that pregnant women taking Stuartnatal absorbed 2.0 mg of supplemental iron per day while women taking Materna absorbed 2.8 mg of supplemental iron per day, concluded that the amount of iron absorbed by pregnant women taking Materna was no less, and in fact, slightly better, than by those taking Stuartnatal. Study I also indicated, however, that neither product provided iron absorption in an amount approaching the 3.5 mg of supplemental iron per day recommended for pregnant women.

The Doctors conducted three follow-up studies ("Studies IA, II, and IIA") and determined that large amounts of calcium carbonate and magnesium oxide in Materna were inhibiting iron absorption and that Materna could be reformulated to reduce or eliminate this effect. Studies IA, II, and IIA, were conceived of, designed and conducted by the Doctors independently of Dr. Ellenbogen and Cyanamid.

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[2] In the late 1970s, Stuartnatal and Materna were the two leading prescription prenatal supplements, with each product commanding 40%-45% of the market.

Test subjects were paid from the University of Colorado ("University") hematology division's general account.

[1302] Importantly, Study IIA, conducted in February of 1980, revealed that there was an inhibitory "threshold effect with calcium carbonate" and determined the specific levels of calcium carbonate and magnesium oxide at which the inhibitory effect occurs. As Dr. Allen explained at trial, "It wasn't [that] you got inhibition increasing at every level, but at 200 milligrams, somewhat more than that, you did not get inhibition, and that led to the second reformulation, the one I described in the March 1980 letter." Dr. Allen sent a letter to Dr. Ellenbogen in March of 1980 referencing the enclosed results of Study IIA:

> The data indicate that there is no significant inhibition of iron absorption by either 350 mg of calcium in the form of calcium sulfate or 200 mg of calcium in the form of calcium carbonate. As we have discussed previously, I believe that the next step would be for Lederle to reformulate their Materna preparation such that it contains 200 mg of calcium in the form of calcium carbonate and 25 mg of magnesium in the form of magnesium sulfate or magnesium oxide. Once this is done, we will test this preparation versus iron alone and I would expect that the absorption of iron from the new Materna should be similar to that of iron alone.

While there is no dispute that the Doctors communicated with Dr. Ellenbogen throughout this process, and designed their studies, in part, around Cyanamid's marketing interests with respect to Stuartnatal, the idea for reformulating Materna, and the research concepts and ideas for reformulating Materna with the appropriate combinations of calcium carbonate and magnesium oxide were entirely the Doctors'.

After receiving Dr. Allen's letter in March 1980, Dr. Ellenbogen drafted a "protocol" for the already completed Study IIA, which he sent to Dr. Allen, and asked Dr. Allen, if he would be interested in performing a new study compar-

ing the iron absorption of Stuartnatal with the various reformulations of Materna suggested by the Doctors. Dr. Allen agreed and in October of 1980, Study III was conducted using two reformulations of Materna suggested by the Doctors' work in Studies IA, II, and IIA. Reformulation A kept the 350 mg of calcium carbonate present in original Materna but reduced the amount of magnesium oxide from 100 mg to 25 mg. Reformulation B, the formulation ultimately manufactured and marketed as "reformulated Materna," reduced the amount of calcium carbonate from 350 mg to 250 mg and also reduced the amount of magnesium oxide from 100 mg to 25 mg of magnesium oxide. Study III, as predicted by the Doctors based on the results of Study IIA, concluded that the reduction in calcium carbonate in the Reformulation B improved iron absorption to 5.0 mg, which was greater than the 3.5 mg recommended for pregnant women.

Subsequently, Cyanamid asked the Doctors to perform another study ("Study IV") comparing the absorption of iron alone with the absorption of iron from reformulated Materna, Stuartnatal, and two other competing prenatal multivitamin/mineral supplements. Study IV, performed in March of 1981, confirmed that reformulated Materna provided the highest iron absorption of the four prenatal multivitamin/mineral supplements tested.

The Doctors wrote up the results of their studies in an article entitled, "Inadequate Iron Absorption from Many Prenatal Multivitamin-Mineral Supplements." The focal point of scientific interest in the article was Table I, which presented the results of the Studies I, II, III, and IV in a distinctive format with four main columns, nine subcolumns, and 12 rows. The Doctors submitted a manuscript of the article to the *New England Journal of Medicine* **[1303]** for consideration in July of 1981, and sent a confidential copy to Dr. Ellenbogen.[3] In the manuscript, the Doctors claimed

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[3] As part of their longstanding personal and professional relationship, Dr. Ellenbogen requested Dr. Allen to provide him with prepublication copies of manuscripts Dr. Allen wrote so that Dr.

credit for the design and conduct of the studies, and the discovery and testing of a range of reformulations to increase iron absorption from prenatal multivitamin/mineral supplements. Dr. Ellenbogen voiced no complaint or objection to this, nor to the fact that he was never mentioned or credited in the manuscript with any of the studies' designs or results. Nevertheless, and within days of receiving the confidential manuscript, Dr. Ellenbogen filled out a Cyanamid form claiming inventorship of the reformulated Materna, and Cyanamid began the first steps toward patenting it.

Cyanamid began selling a reformulated Materna in the fall of 1981. Reformulated Materna improved iron absorption over the previous version of the product. Shortly before announcing the reformulation, and without informing the Doctors or the University, Cyanamid filed a patent application in December of 1981, claiming exclusive rights to the reformulation and naming Dr. Ellenbogen as its sole inventor. Cyanamid copied significant portions of the confidential manuscript, including Table I and its supporting Figures 1-4 in their entirety, into a patent application. The '634 patent issued from this application in 1984.

Reformulated Materna contained, *inter alia*, 250 mg of calcium carbonate and 25 mg of magnesium oxide per dose. The '634 patent covered a broad range of formulations, as shown by claim 1:

> 1. A method of enhancing the absorption of iron in multimineral, iron- supplement preparations comprising the use of limited quantities of oxides and carbonates of calcium and magnesium administered in said preparations to not more than 360 mg and 75 mg respectively per unit dosage based upon the

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Ellenbogen could keep his knowledge of the field current. *Cyanamid III*, 974 F.Supp. at 1344. Dr. Ellenbogen agreed to treat these manuscripts in a confidential manner and not to disseminate them without Dr. Allen's consent. *Id.*

> weight of elemental calcium and magnesium in said oxide and carbonate salts.

'634 patent, col. 5, ll. 42-50. From issuance of the '634 patent in February of 1984 until Cyanamid ceased enforcing the '634 patent due to this pending litigation in December of 1994, Cyanamid enforced its patent rights six times to exclude generic competitors from using the reformulations contemplated by the results and data in Table I and Figures 1-4 of the confidential manuscript. Notwithstanding the Doctors' longstanding personal and professional relationship with Dr. Ellenbogen, to secure the Doctors' continued cooperation and work, neither Dr. Ellenbogen nor Cyanamid mentioned anything about the patent application, the filing of an affidavit in support of the application crediting Dr. Ellenbogen with instigating and supervising all of the studies, the issuance of the '634 patent, or the six civil enforcement actions brought by Cyanamid to prevent generic drug companies from using the patented technology. When the Doctors finally obtained a copy of the '634 patent and saw the copied data table and the content based almost entirely on their confidential manuscript, they and the University filed an action against Cyanamid asserting claims for fraudulent nondisclosure, unjust enrichment, and equitable remedy under the federal patent laws.

B. *The Proceedings to Date*

In a July 7, 1997 opinion, the district court described the "egregious" conduct of Dr. Ellenbogen and Cyanamid, including **[1304]** the wholesale copying by Cyanamid of the confidential manuscript, which Cyanamid incorporated into its patent application and found Cyanamid liable for fraud and unjust enrichment and awarded approximately $45 million in damages. *Cyanamid III*, 974 F.Supp. at 1366. After Cyanamid appealed the judgment, this court remanded the case for a determination of inventorship under "federal patent law principles," stating that if the district court found that the doctors were the inventors under federal law, it should redetermine damages in accordance with this court's opinion. *Cyanamid IV*, 196 F.3d at 1374.

Applying federal patent law, the district court on remand concluded that the Doctors were the inventors and that Ellenbogen had no role in conceiving the invention. The court granted Cyanamid a new trial on damages and separately addressed the Doctors' alternative claims for fraudulent nondisclosure, unjust enrichment, and equitable remedy under federal patent law.

First, on the fraudulent nondisclosure claim, the district court based its compensatory damages award on the "payment that Cyanamid would have made to secure the Doctors' cooperation in filing the required documents with the PTO [Patent and Trademark Office], an assignment of ownership rights and/or an exclusive license from the University." The district court found Cyanamid liable to the plaintiffs for $22,546,000 in fraud damages (royalties at 6% from issuance of the '634 patent in 1984 until Cyanamid ceased enforcing the ' 634 patent due to this pending litigation in 1994).

Second, to determine the equitable remedy for unjust enrichment, the district court calculated the "incremental profits" from the sale of Materna attributable to the right to exclude generic competition that Cyanamid gained from the '634 patent. The district court found that Cyanamid was unjustly enriched by $23,243,228 at the plaintiffs' expense. Finding that the plaintiffs are not entitled to double recovery for their fraud and unjust enrichment claims, the district court only awarded an equitable remedy for unjust enrichment and struck the award of fraud damages.

Third, as to the federal equitable remedy, the district court found that the Doctors' status as equitable titleholders of the '634 patent constituted a separate and independent ground mandating that Cyanamid disgorge its incremental profits.

Last, the district court awarded $500,000 in exemplary damages to each of the Doctors because Cyanamid's conduct was attended by circumstances of fraud, malice, and willful and wanton conduct. Cyanamid timely appealed the liability judgments on the claims for fraudulent nondisclosure, unjust

enrichment, equitable remedy under federal patent law, the associated monetary awards, and the district court's award of exemplary damages. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

II. STANDARD OF REVIEW

The legal question of inventorship is reviewed without deference. *Winbond Elecs. Corp. v. Int'l Trade Comm'n*, 262 F.3d 1363, 1370 (Fed.Cir.2001). This court reviews the findings of fact upon which a district court's inventorship determination is based for clear error. *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1460 (Fed.Cir.1998). "Where there are two permissible views of the evidence, the fact-finder's choice between them cannot be clearly erroneous." *The Am. Original Corp. v. Jenkins Food Corp.*, 774 F.2d 459, 462 (Fed.Cir.1985); *see First Interstate Bank v. United States*, 61 F.3d 876, 882 (Fed.Cir.1995) ("Indeed, credibility determinations by the trial judge 'can virtually never be clear error.' ") (quoting *Anderson* **[1305]** *v. City of Bessemer City*, 470 U.S. 564, 575, 105 S.Ct. 1504, 84 L.Ed.2d 518 (1985)).

We generally review nonpatent issues according to the law of the regional circuit where appeals from the district court would normally lie. *Tronzo v. Biomet, Inc.*, 236 F.3d 1342, 1346 (Fed.Cir.2001). The Tenth Circuit reviews a district court's determination of state law *de novo*. *See Salve Regina Coll. v. Russell*, 499 U.S. 225, 231, 111 S.Ct. 1217, 113 L.Ed.2d 190 (1991). The Tenth Circuit will not disturb a district court's findings of fact, however, unless those findings are clearly erroneous giving due regard to the district court's opportunity to determine the witnesses' credibility. Fed.R.Civ.P. 52(a); *Rascon v. U.S. West Communications, Inc.*, 143 F.3d 1324, 1329 (10th Cir.1998). A finding of fact is clearly erroneous if it is without factual support in the record or if, after reviewing all of the evidence, the court is left with the definite and firm conviction that a mistake has been made. *Raydon Exploration, Inc. v. Ladd*, 902 F.2d 1496, 1499 (10th Cir.1990).

III. DISCUSSION

A. *The Unjust Enrichment Claim Is Not Preempted*

The district court determined that the work, studies and ideas ultimately patented by Cyanamid were discovered by the Doctors, "[e]ntirely independent of Cyanamid." *Cyanamid III*, 974 F.Supp. at 1347. The district court also found that Cyanamid had no co-inventorship interest in the reformulations and had no right to patent the reformulations by copying the Doctors' confidential manuscripts. The district court's findings addressed the respective inventorship rights of the parties and not the rights of third parties not before the court. In other words, the district court applied principles of unjust enrichment to determine the parties' rights with respect to each other and declined to assess the parties' rights to exclude as against the rest of the world pursuant to federal patent principles.

Cyanamid, citing *Waner v. Ford Motor Co.*, 331 F.3d 851 (Fed.Cir.2003), argues that federal patent law precludes any state law unjust enrichment award, because the Doctors did not protect their ideas either as trade secrets or patents. Further, Cyanamid alleges the district court's findings regarding unjust enrichment essentially create state patent rights--a result the Supreme Court prohibited in *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 109 S.Ct. 971, 103 L.Ed.2d 118 (1989). We rejected a similar argument in *Cyanamid IV*.

Federal preemption takes three basic forms: First, Congress may explicitly preempt state law; second, a federal scheme may occupy a given field and thus preempt state law in that field; and third, when compliance with both state and federal law is impossible, the conflicting state law is preempted. *English v. Gen. Elec. Co.*, 496 U.S. 72, 78-79, 110 S.Ct. 2270, 110 L.Ed.2d 65 (1990). Whatever the form, the key is whether the operation of state law "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress." *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 479, 94 S.Ct. 1879, 40 L.Ed.2d 315 (1974) *(internal quotation marks and citation omitted).*

Here, although federal patent law plainly does not provide for explicit preemption, 35 U.S.C. § § 1-376 (2000), a state may not offer patent-like protection to intellectual creations that would otherwise remain unprotected as a matter of federal law, *Bonito Boats*, 489 U.S. at 156, 109 S.Ct. 971; *Midwest Indus., Inc. v. Karavan Trailers, Inc.*, 175 F.3d 1356, 1363 (Fed.Cir.1999). Through the federal patent laws, Congress has balanced innovation **[1306]** incentives against promoting free competition, and state laws upsetting that balance are preempted. *See Bonito Boats*, 489 U.S. at 152, 109 S.Ct. 971. Thus, a tangible invention or intangible process that does not satisfy the requirements of federal patent law--novelty, nonobviousness, and the like--cannot be protected under either federal or state law.

Under the Supremacy Clause, "it has been settled that state law that conflicts with federal law is 'without effect.' " *Cipollone v. Liggett Group, Inc.*, 505 U.S. 504, 516, 112 S.Ct. 2608, 120 L.Ed.2d 407 (1992) (quoting *Maryland v. Louisiana*, 451 U.S. 725, 746, 101 S.Ct. 2114, 68 L.Ed.2d 576 (1981); citing *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 427, 4 L.Ed. 579 (1819)). However, the Supremacy Clause does not require full consonance between federal and state intellectual property protections. *See Goldstein v. California*, 412 U.S. 546, 93 S.Ct. 2303, 37 L.Ed.2d 163 (1973) (holding that federal copyright law does not preempt state copyright law providing greater protection); *Kewanee Oil*, 416 U.S. at 485, 94 S.Ct. 1879 (holding that federal patent law does not preempt state trade secret law protecting unpatentable processes). The Supreme Court has summarized its preemption approach as follows: "States may not offer *patent-like protection* to intellectual creations which would otherwise remain unprotected as a matter of federal law." *Bonito Boats*, 489 U.S. at 156, 109 S.Ct. 971 (emphasis added); *see also Dow Chem. Co. v. Exxon Corp.*, 139 F.3d 1470, 1475 (Fed.Cir.1998) (construing Supreme Court precedent to preempt state laws that "seek to offer patent-like protection to intellectual property inconsistent with the federal scheme"). In that case, the Supreme Court struck down a state statute that prohibited copying boat hull designs, because "[t]he

Florida statute allows petitioner to [ ]assert a substantial property right *in the idea*, thereby constricting the spectrum of useful public knowledge." *Bonito Boats*, 489 U.S. at 159, 109 S.Ct. 971 (emphasis added).

The right involved here and compensated for under a theory of unjust enrichment, however, is not "patent-like" at all. As we explained in *Cyanamid IV*, "the unjust enrichment claim springs not from an attempt to enforce intellectual property rights, but instead from Cyanamid's alleged wrongful use of the Doctors' research results." *Cyanamid IV*, 196 F.3d at 1371-72. As *Cyanamid IV* recognizes, then, a claim for unjust enrichment is "not simply an attempt to enforce property rights," *id.*; rather, under Colorado law, as discussed below, Part III.C, *infra*, the Doctors' claim of unjust enrichment is a legal claim to remedy the breach of a contract implied in law for disclosure of their confidential manuscript in exchange for a promise not to disseminate the idea without the Doctors' consent. *See DCB Constr. Co. v. Cent. City Dev. Co.*, 965 P.2d 115, 119 (Colo.1998) (characterizing an unjust enrichment claim as a contract implied in law). The fact that Cyanamid improperly secured the '634 patent and used this patent to obtain incremental profits only pertains to restitution for the unjust enrichment claim.

In *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 99 S.Ct. 1096, 59 L.Ed.2d 296 (1979), the Supreme Court held that a state contract law enforcing a royalty agreement for an unpatentable invention was not preempted. In reaching that result, the Supreme Court reviewed three purposes of the patent system: (1) to foster and reward invention, (2) to stimulate further innovation, and (3) to ensure free use of ideas in the public domain. Because the contract involved did not conflict with any of these goals, its enforcement was not preempted by federal patent law. Applying these principles to the present case, we **[1307]** conclude that the Doctors' claim of unjust enrichment does not undermine the purposes of the federal patent scheme: the Doctors can collect the fruits of their research, which fosters both specific and general incentives to innovate, while their reformula-

tions stimulate further innovation; at the same time, no information in the public domain is denied free circulation. The unjust enrichment claim does not prevent the public from using these ideas. Instead, it simply affects Cyanamid's use of confidential information it improperly copied to secure the '634 patent. Lastly, the claim of unjust enrichment does not withdraw ideas from the public domain as the reformulations were not in the public domain before Cyanamid filed the '634 patent application by copying the Doctors' confidential manuscript.

Allowing the doctors to recover damages for improper use of their confidential manuscript, which was also submitted to a journal for publication, provides another incentive separate and apart from the patent laws. As the Supreme Court has said, "certainly the patent policy of encouraging invention is not disturbed by the existence of another form of incentive to invention." *Kewanee Oil*, 416 U.S. at 484, 94 S.Ct. 1879. There is no patent law preemption in the instant case.

Accordingly, contrary to Cyanamid's argument, we find no conflict with the Supreme Court's decision in *Bonito Boats*. Unlike the state law at issue in *Bonito Boats*, enforcement of the quasi-contract in this case does not substantially impede public use of an *unpatentable* intellectual creation. *See Bonito Boats*, 489 U.S. at 156-57, 109 S.Ct. 971. Importantly, the application of an unjust enrichment claim does not impermissibly interfere with the federal patent scheme, *see id.* at 165, 109 S.Ct. 971, but rather benefits society by requiring "[a] person who has been unjustly enriched at the expense of another ... to make restitution to the other," *Restatement of Restitution* § 1 (1937).

We also find no conflict with our decision in *Waner*. In *Waner*, the plaintiff designed and manufactured a novel fender liner for dual rear wheel trucks, sold the same to a Ford dealer, and contacted Ford Motor Company to see if it was interested in additional purchases. *Waner*, 331 F.3d at 853. Ford declined to negotiate with Waner, choosing instead to utilize Waner's idea commercially, without payment

or permission. *Id.* Waner sued for unjust enrichment, seeking compensation for Ford's unauthorized use of his fender liner idea during the period before issuance of the patent. *Id.* We held that "absent secrecy, state law cannot create a collateral set of rights available as an adjunct or expansion to patent rights," *id.* at 856 (citing *Bonito Boats*, 489 U.S. at 149, 109 S.Ct. 971), and affirmed the district court's grant of summary judgment dismissing Waner's unjust enrichment claim.

Unlike the inventor in *Waner*, the Doctors here did not seek to prevent the use of information they placed in the *public domain;* rather, they seek to prevent Cyanamid from unjustly securing the '634 patent and obtaining the incremental profits by copying significant portions of the Doctors' *confidential* manuscript describing the invention. The district court's unjust enrichment remedy was specifically limited to the incremental profits Cyanamid wrongfully made by obtaining the '634 patent and did not encompass total profits Cyanamid made by selling a product incorporating the Doctors' invention. Moreover, the Doctors are not attempting to enforce patent-like rights *before* issuance of a patent as in *Waner*. Instead, consistent with a separate theory of unjust enrichment, the remedy here was calculated based on the period *after* issuance of the patent, not on the date of public disclosure. **[1308]** We therefore conclude that the district court properly determined that federal patent law does not preclude an unjust enrichment award under Colorado law.

B. *Inventorship*

Cyanamid argues that the district court erred in not construing the claims, but nevertheless concluding that "the scope of the patent claims is precisely that of the Doctors' Article"--even though the patent claims contain limitations that are never mentioned in the Article and the Doctors did not even allege that they conceived of such limitations. Cyanamid also asserts that the Doctors' "inventorship" evidence consists solely of uncorroborated oral testimony.

The University responds that it overcame the presumption that Dr. Ellenbogen was the inventor of the '634 technology, corroborated the Doctors' testimony, and proved by facts supported by clear and convincing evidence that they are the sole inventors. The University asserts that Cyanamid's only response to this evidence was to point to the testimony of Dr. Ellenbogen, which the district court found not credible. The University argues that the district court considered each claim in the '634 patent and found that the Doctors conceived the entire numerical range of calcium as calcium carbonate and magnesium as magnesium oxide in the claims.

We reject Cyanamid's arguments. "Conception is the touchstone to determining inventorship." *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed.Cir.1997). "[Conception] is 'the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.' " *Burroughs Wellcome Co. v. Barr Labs. Inc.*, 40 F.3d 1223, 1228 (Fed.Cir.1994) (quoting *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed.Cir.1986)). There is a presumption that the inventors named on an issued patent are correct, so nonjoinder of inventors must be proven by facts supported by clear and convincing evidence. *See Fina Oil*, 123 F.3d at 1472; *see also Hess v. Advanced Cardiovascular Sys., Inc.*, 106 F.3d 976, 980 (Fed.Cir.1997) ("[T]he burden of showing misjoinder or nonjoinder of inventors is a heavy one."); *Price v. Symsek*, 988 F.2d 1187, 1191 (Fed.Cir.1993). What is required is "corroborating evidence of a contemporaneous disclosure that would enable one skilled in the art to make the invention." *Burroughs Wellcome*, 40 F.3d at 1228. "The determination of whether a person is a joint inventor is fact specific, and no bright-line standard will suffice in every case." *Fina Oil*, 123 F.3d at 1473.

Here, the district court carefully followed the remand instructions from this court and applied federal patent law principles to determine that the Doctors were the inventors

of the technology of the '634 patent based on, *inter alia*, four findings of fact. First, the district court found that the '634 patent discloses that large amounts of calcium carbonate and magnesium oxide inhibit the absorption of iron, and iron absorption from prenatal multivitamin/mineral supplements may be enhanced by decreasing the total amounts of these calcium and magnesium salts. Second, the district court found that the Doctors, not Dr. Ellenbogen, invented the subject matter of the '634 patent because: (a) the Doctors in late 1979 conceived of and tested the idea that calcium carbonate and magnesium oxide inhibited iron absorption in prenatal multivitamin/mineral supplements based on Studies IA and II and conceived of the idea that reducing those components would improve iron absorption in pregnant women based on Study II; (b) the Doctors described their invention with particularity in Dr. Allen's December 1979 **[1309]** and March 1980 letters and in their confidential manuscript; and (c) the December 1979 letter, March 1980 letter, and confidential manuscript constitute compelling corroborative evidence. Third, the district court rejected Cyanamid's contention that the "presumption of correctness" to which issued patents are entitled had not been overcome by the evidence presented by the University because Cyanamid had no other evidence besides the testimony of Dr. Ellenbogen, which the district court expressly discredited:

> I found Dr. Ellenbogen's testimony lacking in credibility based on my careful consideration of his demeanor on the witness stand and the substance of his testimony on direct and cross-examination. I found Dr. Ellenbogen misrepresented to Dr. Raymond and to Cyanamid generally his role in the Studies and in their design, and in the design and conception of the invention ultimately patented.

Finally, the district court rejected Cyanamid's assertion that the Doctors were at most joint inventors with Dr. Ellenbogen because the idea of the complete invention was exclusively that of the Doctors. Based on the record and the

district court's findings of fact, we hold that the district court did not err in concluding that there were facts supported by clear and convincing evidence that the Doctors were the sole inventors of the subject matter in the '634 patent.

C. *Unjust Enrichment*

Cyanamid argues that the judgment on the claim for unjust enrichment should be reversed because the plaintiffs failed to prove a material element of that claim. Specifically, Cyanamid asserts that the Doctors have no basis for a claim of unjust enrichment, because the benefits that the Doctors admittedly derived through their collaboration with Cyanamid, together with the fact that they never sought to patent or practice the invention at issue, establish that the '634 patent was not obtained at the plaintiffs' expense, as is required under Colorado law. We reject this argument.

Under Colorado law, the elements of the claim of unjust enrichment are stated as: (1) at plaintiff's expense (2) defendant received a benefit (3) under circumstances that would make it unjust for defendant to retain the benefit without paying for it. *DCB Constr. Co.*, 965 P.2d at 119-20 (citing *Restatement of Restitution* § 1 cmt. a (1937)). The Restatement of Restitution states "[a] person who has been unjustly enriched at the expense of another is required to make restitution to the other." *Restatement of Restitution* § 1 (1937). The comment to this section explains that "[a] person is enriched if he has received a benefit. A person is unjustly enriched if the retention of the benefit would be unjust."

The Doctors' claim of unjust enrichment is a legal claim in quasi-contract for money damages based upon principles of restitution. *See* 1 George E. Palmer, *The Law of Restitution* § § 1.1, 1.2 (1978). When restitution is the primary basis of a claim, as opposed to a remedy for bargains gone awry, it invokes what has been characterized in Colorado as a "contract implied in law." *DCB Constr. Co.*, 965 P.2d at 119; *see also Ninth Dist. Prod. Credit Ass'n v. Ed Duggan*,

Inc., 821 P.2d 788, 794-95 (Colo.1991) (characterizing an unjust enrichment claim as a contract implied in law).

The unjust enrichment claim in the context of a contract implied in law does not depend in any way upon a promise or privity between the parties. *Wistrand v. Leach Realty Co.*, 147 Colo. 573, 364 P.2d 396, 397 (1961). The claim arises "not from consent of the parties, as in the case of contracts, express or implied in **[1310]** fact, but from the law of natural immutable justice and equity." *DCB Constr.*, 965 P.2d at 119. Thus, "a 'contract implied in law' is not really a contract at all, and may even be imposed in the face of a clearly expressed contrary intent if justice requires." *Id.* (citing *Sears Roebuck & Co. v. Ragucci*, 203 N.J.Super. 82, 495 A.2d 923, 926 (1985)). We next proceed to review the application of the general test for recovery under a theory of unjust enrichment in the context of the Doctors' confidential manuscript.

Considering the first prong of the test, in this case there is no question that any benefit Cyanamid received came at the Doctors' expense. The Doctors conducted and the University funded the three critical follow-up studies (Studies IA, II, and IIA) and determined that large amounts of calcium carbonate and magnesium oxide in Materna were inhibiting iron absorption and that Materna could be reformulated to reduce or eliminate this effect. The Doctors therefore performed critical Studies IA, II, and IIA on their own initiative and at their own expense.

The second prong examines whether Cyanamid was benefited or enriched. The district court found that Cyanamid was unjustly enriched by its conduct in taking for itself exclusivity rights in the Doctors' reformulation technology and then secretly patenting that technology without the Doctors' or University's knowledge or consent. This taking not only deprived the University of the financial gain it could have realized had Cyanamid paid for an exclusive license or assignment of rights and filed its patent application, but also betrayed the Doctors and deprived both them and the Uni-

versity of their prerogative not to patent the Doctors' invention or to exclude others from benefiting from it.

Finally, the third prong of the test requires consideration of whether it would be unjust to allow Cyanamid to retain the benefit conferred without paying for its value. The incremental profits Cyanamid earned by virtue of its possession and enforcement of the wrongfully secured '634 patent are the direct result of misconduct. It is undisputed that Cyanamid copied the text of the confidential manuscript; incorporated Table I in its entirety without substantive amendment into the '634 patent application, leading the district court to state, "[t]he completeness, and obviousness, of the wholesale lifting of the Doctors' work in Table I and Figures 1-4 cannot be overstated." *Univ. of Colo. Found., Inc. v. Am. Cyanamid Co.*, 105 F.Supp.2d 1164, 1179 n. 9. The incremental profits constitute ill-gotten and undeserved gains for which Cyanamid did not pay and would not have received, because the rights that generated them would never have been sold.

In short, in the situation where an invention is involved, there is a production which by manufacturing copies can be put to marketable use. Whoever copies parts of a confidential manuscript to obtain a patent takes benefits or profits which otherwise would generally go to the producer. Here, the relationship between the parties before and after the disclosure in the confidential manuscript, the promise by Dr. Ellenbogen not to disseminate the idea without the Doctors' consent, the specific character, novelty, and patentability of the Doctors' invention, the subsequent use made of it by Cyanamid to secure the '634 patent and obtain the incremental profits, and the lack of compensation given to the Doctors all indicate that the application of unjust enrichment is appropriate.

D. *Damages*

1. *The Determination for Unjust Enrichment Correctly Measured Damages*

We must next determine the appropriate measure of Cyanamid's unjust **[1311]** enrichment. Cyanamid argues

that the proper measure of damages is the value that Cyanamid would have paid in 1981 to acquire the research results and for any cooperation needed to apply for the '634 patent, not disgorgement of Cyanamid's profits as the district court found. Neither *Cyanamid IV* nor Colorado case law supports Cyanamid's assertions.

In *Cyanamid IV*, our review was limited to the matters appealed. We did not disturb any of the district court's factual findings regarding unjust enrichment, noting that "Cyanamid does not argue that the district court erred in any findings under its unjust enrichment analysis. Therefore, this court does not review those findings." We did not expunge the facts elicited at trial or remand the case for a new trial. Such a mandate--premised on federal patent standards to resolve the threshold question of inventorship--simply required the district court on remand to apply the correct law to the facts already determined to be sufficient to meet the correct legal standard. Indeed, Cyanamid agreed on remand that no further evidence regarding liability should be introduced. Accordingly, based on the evidence presented at trial, the district court found on remand that, under Colorado law, the Doctors were entitled to equitable relief on their unjust enrichment claim separate and independent from their remedy at law for fraudulent nondisclosure.

We conclude that under Colorado law, the district court did not abuse its discretion by ordering Cyanamid to disgorge the incremental profits directly attributable to its misconduct. Colorado law supports the benefits-based approach used by the district court to effect equitable relief in appropriate cases. *See EarthInfo, Inc. v. Hydrosphere Res. Consultants, Inc.*, 900 P.2d 113, 118 (Colo.1995) (*en banc*) (adopting a case by case approach to determining whether profits may be awarded as restitution in a claim for unjust enrichment). This is true even if it results in plaintiff receiving a greater reward than if simply awarded damages for the defendant's misconduct:

> Restitution, which seeks to prevent unjust enrichment of the defendant, differs in principle from

> damages, which measure the remedy by the plaintiff's loss and seek to provide compensation for that loss. As a consequence, "*in some cases the defendant gains more than the plaintiff loses*, so that the two remedies may differ in practice as well as in principle."

Id. (quoting 1 Dan B. Dobbs, *Law of Remedies* § 4.1(1), at 555, 557 (2d ed.1993)) (emphasis added).

No wooden formulas exist for determining when restitution of profits realized by a party is permissible. *Id.* at 119. Because it is an equitable remedy, "whether profits are awarded to a nonbreaching party shall be determined within the discretion of the trial court on a case by case basis." *Id.* at 118. As the Colorado Supreme Court envisioned it, in determining whether restitution of profits or disgorgement in a given case is appropriate:

> [C]ourts must resort to general considerations of fairness, taking into account the nature of the defendant's wrong, the relative extent of his or her contribution, and the feasibility of separating this from the contribution traceable to the plaintiff's interest. 1 George E. Palmer, *The Law of Restitution* § 2.12 at 161 (1978) [hereinafter "Palmer"]. Thus, the more culpable the defendant's behavior, and the more direct the connection between the profits and the wrongdoing, the more likely that plaintiff can recover all defendant's profits. *See, e.g.*, Douglas Laycock, *The Scope and Significance of Restitution*, 67 Tex. L. Rev. 1277, 1289 (1989). The trial court must **[1312]** ultimately decide whether the whole circumstances of a case point to the conclusion that the defendant's retention of any profit is unjust.

Id. at 119.

Applying these principles of Colorado law to this case, we conclude that the district court properly limited the equitable remedy by calculating the incremental profits from the sale of Materna *attributable to the right to exclude* generic

competition that Cyanamid gained from the '634 patent--not the total profits Cyanamid made by selling a product incorporating the Doctors' invention. The district court found Cyanamid liable in the amount of $53,106,066, which included $22,243,228 for unjust enrichment, 8% statutory prejudgment interest through January 1, 2002, and the additional prejudgment interest that had accrued from January 1, 2002, to the date of judgment. This measure of damages comports with our opinion in *Cyanamid IV*, which allowed the district court to base its damages calculation on evidence of the incremental profit or benefit that Cyanamid realized from the Doctors' invention. Assuming that the determination of damages finds support in the evidence and was not the product of procedural error, we conclude that the district court relied on an appropriate measure of damages and would support a valid final judgment. Accordingly, we must next consider whether the measure of damages was supported by sufficient evidence or was flawed by any legal error occurring at trial.

2. *Substantial Evidence Supports the Damages Determination*

We conclude that ample evidence in the record supports the district court's determination of damages. The district court found that Professor Rubinfeld, an expert economist, ably addressed the amount of profits to be returned, performing an analysis that calculated the incremental profits, i.e., sales less production and marketing/distribution costs, of Cyanamid that were attributable to the right to exclude generic competition. Specifically, Professor Rubinfeld calculated Cyanamid's incremental profit in terms of Materna sales, from the issuance of the '634 patent in 1984 until Cyanamid ceased enforcing the '634 patent due to this pending litigation in 1994, less Cyanamid's production and marketing/distribution costs, and compared them with the sales of co-industry leader Stuartnatal's unpatented product, less production and marketing/distribution costs, over the same period of time. Based on this analysis, which the district court determined to be credible, persuasive, and conserva-

tive, the district court found Cyanamid was unjustly enriched by $23,243,228. Accordingly, the district court did not clearly err in its factual findings underlying its award of damages for unjust enrichment.

E. *Exemplary Damages*

Cyanamid argues that the award of exemplary damages was erroneous because the trial evidence provides no basis for an award of exemplary damages. We reject this argument.

Under § 13-12-102(1) of the Colorado Revised Statutes, a factfinder may award exemplary damages in an amount not to exceed the amount of actual damages if it determines that the defendant's tortious conduct "is attended by circumstances of fraud, malice or willful and wanton conduct." The district court cited this express language when it awarded exemplary damages of $500,000 to each of the Doctors. As discussed above, the district court detailed Cyanamid's misconduct in numerous factual findings. Accordingly, we affirm the district court's award of exemplary damages to each of the Doctors.

[1313] F. *Fraudulent Nondisclosure, Equitable Remedy Under Federal Patent Law*

In light of our conclusion that the district court properly awarded damages for unjust enrichment, we need not review the district court's alternative grounds for damages based on fraudulent nondisclosure and equitable remedy under the federal patent laws.

IV. CONCLUSION

For the foregoing reasons, the judgment of the district court is

AFFIRMED.

APPENDIX B

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

THE UNIVERSITY OF COLORADO FOUNDATION, INC., ET AL., PLAINTIFFS,

V.

AMERICAN CYANAMID COMPANY, A MAINE CORPORATION, DEFENDANT.

No. CIV.A. 93-K-1657

Aug. 13, 2002

[216 F.Supp 2d 1188]

FINDINGS OF FACT AND CONCLUSIONS OF LAW ON DAMAGES AND EQUITABLE REMEDIES ON REMAND

KANE, Senior District Judge.

This matter is before me for the issuance of final Findings of Fact and Conclusions of Law on the issue of damages and equitable remedies available to Plaintiffs after my determination, on remand, that Plaintiffs were entitled to the re-entry of judgment in their favor and against Defendant on Plaintiffs' claims for fraud and unjust enrichment. *See University of Colorado Found. v. American Cyanamid Co.*, 105 F.Supp.2d 1164 (D.Colo.2000)(*Cyanamid IV*) (bifurcating liability and remedies issues and ordering a reopening of evidence and retrial on latter), *on remand from University of Colo. Found., Inc. v. American Cyanamid, Co.*, 196 F.3d 1366 (Fed.Cir.1999).[1] Preliminary rulings intended to edify

[1] Earlier decisions in this timeworn tale can be found at *University of Colo. Found., Inc. v. American Cyanamid*, 880 F.Supp. 1387 (D.Colo.1995)(rejecting, as a matter of law, Plaintiffs' common

the drafting of proposed final findings and conclusions on remand were set forth in *University of Colo. Found., Inc. v. American Cyanamid Co.*, 153 F.Supp.2d 1231 (D.Colo.2001) (entitled Preliminary Opinion to Guide Findings of Fact and Conclusions of Law (" 'Preliminary Opinion' or *Cyanamid V*")). Having carefully reviewed Plaintiffs' Proposed Findings of Fact and Conclusions of Law, Defendant's Objections thereto and Alternative Calculations, Plaintiffs' Corrected Proposed Findings of Fact and Conclusions of Law and Response to Defendant's Alternative Calculations, Defendant's Response to Correction to Plaintiffs' Proposed Findings of Fact and Conclusions of Law, Plaintiffs' Supplemental Authority, and Defendant's Response to Plaintiff's Supplemental Authority, the following constitute my Findings of Fact and Conclusions of Law with respect to the remedies to be afforded Plaintiffs for Defendant's fraud and unjust enrichment:

1. STANDING.

I reiterate my finding from the 1996 trial that each of the Plaintiffs has standing to pursue claims against Cyanamid. *See Cyanamid III*, 974 F.Supp. at 1353.

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law claim of conversion as well as Plaintiffs' claim for correction of patent, but finding Plaintiffs had standing to pursue claims for equitable title/relief under Patent Act)(*Cyanamid I*); *University of Colo. Found., Inc. v. American Cyanamid Co.*, 902 F.Supp. 221 (D.Colo.1995)(on reconsideration of *Cyanamid I*, agreeing with Cyanamid that Plaintiffs' equitable title claim must fall with claim for patent correction under Act)(*Cyanamid II*); *University of Colo. Found., Inc. v. American Cyanamid Co.*, 974 F.Supp. 1339 (D.Colo.1997)(finding in favor of University Plaintiffs and against Cyanamid on Plaintiffs' claims for fraud and unjust enrichment and awarding approximately $45 million in damages)(*Cyanamid III*).

II. PROCEDURAL HISTORY, APPELLATE WAIVER, LAW OF THE CASE, AND VIABILITY OF THE REMEDY OF DISGORGEMENT ON REMAND.

With respect to my recitation of the procedural history of this case and rulings [1191] on the issues of appellate waiver, law of the case, and viability of the remedy of disgorgement on remand, I refer to pages 1231--1237 of *Cyanamid V* and related pages 1172--73 of *Cyanamid IV*. Despite their best efforts, the parties' attempts to paraphrase my analysis and rulings in the Corrected Proposed Findings of Fact and Conclusions of Law and objections thereto include subtle--and sometimes not-so-subtle--"spin" that risks creating unintended distinctions between my analysis in these introductory sections of the Preliminary Opinion and any characterization of it as "final" Findings and Conclusions here. The issues of appellate waiver, law of the case and the viability of disgorgement as a remedy after remand are legal ones, and my analysis of them in *Cyanamids IV* and *V* speaks for itself. Rather than providing these enduring combatants with the means of creating additional and unnecessary grounds for appeal, I simply refer to my previous analysis and decline to create the legal ambiguities the parties' submissions invite.

FINDINGS OF FACT REGARDING FRAUD DAMAGES.

Substantial Value to Cyanamid of Exclusive Rights in the '634 Patent.

1. I find beyond any doubt that Cyanamid, in 1981, saw substantial value in the reformulation ideas conceived by the Doctors in Studies IA and II and IIA and refined in Studies III and IV. Tr. at 593, 598 and 605 (Rubinfeld testimony); Exs. 114 ("this is the most important thing we have done"), 225 (discussing Cyanamid's pre-patent preparations to enforce the '634 Patent against generics), 245; McCool Tr. at 243, 254-255 and 258-259; Damson Tr. (5/14/96) at 1485-88. Whether these ideas are referred to as "the reformulation technology" or "the '634 [Patent] technology" is immaterial, as the terms are interchangeable. *See Cyanamid IV*, 105

F.Supp.2d at 1180-81 (rejecting Cyanamid's attempts to characterize the scope of the invention patented as being broader than the reformulation technology conceived by the Doctors, and concluding they were one and the same).

2. Cyanamid announced the reformulation of Materna on October 14, 1981 (Ex. 174) and within days, Dr. Ellenbogen and Cyanamid's in-house patent counsel R.P. Raymond were circulating a proposed patent application on the reformulation technology. Ex. 178. Cyanamid's Application for Letters Patent, 28,776 (Ex. 189A, *see also* Ex. 234), signed by Dr. Ellenbogen and including the tables and figures cut, pasted and photocopied from the Doctors' New England Journal of Medicine article manuscript, was filed on or about December 10, 1981.

3. Cyanamid saw value in getting the patent filed before the end of the year. A December filing would secure a 1981 trigger date for future enforcement actions against generic manufacturers of prenatal vitamin formulations within the patent's scope. Cyanamid appreciated this value, as evidenced by a September 1983 internal memorandum explaining that, because the Materna patent was submitted in December 1981, "[a] generic is in violation of our patent unless the product was on the market prior to December 1980." (Ex. 225)

> Since [sic] reformulated Materna was introduced in October 1981, no generic companies would have been copying our present formula until after the October 1981 introduction. Therefore [assuming the patent is issued], it is assumed that all generic Materna formulas are in violation of our patent.

Id. It is a reasonable inference from these facts that Cyanamid appreciated the value of a 1981 filing date when it introduced **[1192]** reformulated Materna in 1981, and would have come to any negotiations with UPI or Dr. Allen to secure exclusive rights to the Doctors' reformulation technology strongly motivated to secure them before the end of the year.

4. The "big advantage" of patent protection is the elimination of "direct generic competition." Rubinfeld Test., Tr. at 614. Additional value results from the marketing gains associated with the reduction or elimination of "leakage," i.e., revenue lost as a result of the substitution by pharmacists of generics for brand name products that are not patented. Rubinfeld Test., Tr. at 592-596. Substitution rates for unpatented brand-name prenatal vitamin products is 50% (or higher) such that marketing dollars spent promoting those products yield correspondingly low returns, i.e., 50 cents on the dollar or less. *See id.*, Tr. at 592, 594-595, 616-617; Ex. 732 at A063871 (substitution rates for Stuartnatal "historically 60% and currently close to 50%"). I find Cyanamid appreciated these aspects of value in 1981 when it filed its patent application, and they would have strongly influenced any negotiations it had with UPI and Dr. Allen for exclusive rights to the invention in 1981.

5. The damage award in *Cyanamid III* was "the reasonable royalty Plaintiffs could have expected had they assigned or transferred exclusive rights to the reformulation to Cyanamid." *Cyanamid III*, 974 F.Supp. at 1357. The only evidence presented at the 1996 trial on the question of reasonable royalty were royalty rates and sales figures data offered by Plaintiffs. *See Cyanamid V*, 153 F.Supp.2d at 1237-38 (quoting *Cyanamid III*) Accordingly, I applied the 12% royalty rate to the aggregate sales figures presented by Plaintiffs to award Plaintiffs $44,396,159, which included prejudgment interest.

6. On Cyanamid's Motion and over Plaintiffs' objection, evidence on the question of damages and equitable remedies was reopened on remand. *Cyanamid V* at 1235-36. Post-remand discovery was vigorous, with the parties exchanging tens of thousands of pages of documents. *Id.* As a result, substantial additional evidence on royalty rates, sales figures and licensing arrangements projecting them into the future was received at the 2001 damages retrial. *E.g.*, Tr. Testimony of Messrs. Alpert, McCool Atkinson, and Dr. Allen; Exs. 752 (Materna foreign sales 1995-2000), 1870 (Ma-

terna documents reflecting domestic sales and cost deductions for 1978-2000), 1945 (Univ. Colorado Licenses and Sublicenses), and 1946 (Licenses Negotiated by University Patents, Inc.).

Licensing Sophistication of the University and Dr. Allen in the early 1980's.

7. As the Federal Circuit in its opinion on appeal recognized, university licensing of faculty inventions was in its nascent stages in 1981. *University of Colorado Foundation, Inc. v. American Cyanamid Co.*, 196 F.3d 1366, 1374 (Fed.Cir.1999).[2] **[1193]** At the time of the hypothetical negotiations in this case, however, I specifically find that the University and Dr. Allen were more experienced than most universities and faculty researchers in patenting and licensing intellectual property.

8. Beginning in the late 70's, the University had a contract with University Patents Inc. ("UPI"), a publicly traded, for-profit corporation that specialized in representing universities, research laboratories and professional inventors to commercialize the inventions and intellectual property they generated. Alpert Tr. at 71-72, McPike Depo. at 134, Atkinson Tr. at 1715. UPI was founded and run by

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[2] The Federal Circuit also noted that "the Bayh-Dole Act, which set the stage for modern university licensing, went into effect less than six months before the '634 patent's filing date." 196 F.3d at 1374 (citing 35 U.S.C. § 200 (1994)). While it is of little import in this case where my findings, specifically, are that the University of Colorado was ahead of the curve and had more experience than most universities of that era in patenting and licensing the intellectual property of its faculty researchers in 1981, I note that the Bayh-Dole Act did not apply to the type of research in which Drs. Allen and Seligman were engaged when they developed the '634 Patent technology. Not only did the Doctors' invention predate the Act's effective date, but also the Act applies only to inventions arising from federally funded research and development. 35 U.S.C. § 200. No federal funding was associated with the Doctors' research.

former patent attorneys who were sophisticated and well qualified to exploit the commercial potential of work conducted by University researchers. Alpert Tr. at 70-74, 92-95. Pursuant to its contract with the University, UPI was to license and commercially exploit University-generated intellectual property. Exs. 13 (April 1976 Servicing Agreement); 141 (May 1981 Servicing Agreement) and 272 (July 1986 Servicing Agreement); Siegel Depo. at 22-23; Alpert Tr. at 75-77; McCool Tr. at 240; Caruthers Tr. at 2323-2324; Allen Tr. at 941.

9. In 1981, Dr. Allen had already had experience patenting and commercially exploiting his inventions, and continued to do so through the 1980's and 90's. Atkinson Tr. at 1758; Allen Tr. at 956-957, 970-971, 980-981, 995-996, 998-999, 1001, 1010, 1023, 1059; Alpert Tr. at 91-92; Exs. 508, 510, 516, 828, 1549, 1550, and 1676. Beginning in 1980, Dr. Allen patented seven of his inventions, Ex. 1722, three of which resulted in six commercial licenses in the early to mid-1980's. Exs. 508, 510, 516, 828, 1549, and 1550. *See* Exs. 28 (Vitamin B12 patent application), 42, 43, 83, 90 (Reticulocytes patent application), 95 (Patent regarding Vitamin B12), 508 (September 1980 Corning Glass Works license), 510 (January 1981 Amersham International license), 516 (December 1981 Corning Glass Works license), 828 (July 1982 Diagnostic Products license), 829 (January 1991 Microgenics Corporation license), 1549, 1550 (September 1984 Bio-Rad Laboratories license), 1594 (July 1994 Microgenics Corporation license), 1676 (1978 invention disclosure regarding Vitamin B12).

10. I find that Mr. Alpert, a former IBM and General Electric patent attorney in the late 1960's and early 1970's and the President of UPI in the early 1980's, was credible and knowledgeable about the licensing practices of the University (as well as other universities) during the relevant 1981 time period. While I did not find Cyanamid's expert Mr. Atkinson lacking in general knowledge of the relevant period in the industry, I discounted his testimony because he did not consult with any of the individuals who were familiar

with and would have engaged in any 1981 negotiations between the University and Cyanamid. Moreover, he testified pursuant to instructions from Cyanamid's counsel that did not reflect the realities of the relationship between the University, Dr. Allen and Cyanamid or the University's negotiating position with respect to the '634 patent technology leading up to or during the relevant 1981 time period. Atkinson Tr. at 1753--65, 1775-1779. *See Cyanamid V*, 153 F.Supp.2d at 1240.

11. Cyanamid was aware of UPI's role in the negotiation of licenses regarding University-generated intellectual property. Allen Tr. at 1060; Alpert Tr. at 99-100; Exs. 153 and 194.[3]

[1194] 12. While most universities at that time were naive about the valuation of patents, the University of Colorado had the prudence to obtain outside expertise that more than compensated for its inexperience. That expertise, in the form of UPI, would have recognized on the University's behalf in the early 1980's the significant value of the '634 technology to Cyanamid and/or its competitors at that time. Alpert Tr. at 92.

Hypothetical License Terms.
Up-Front Payment.

13. The negotiations between the University and Cyanamid concerning an exclusive license for the '634 technology would have resulted in payment by Cyanamid of an up-front payment to the University. McCool Tr. at 240; Alpert Tr. at 92-93, 202.

14. I reject as overreaching and unpersuasive both the testimony of Plaintiffs' expert, Shannon McCool, that the '634 technology would have commanded a $2 million up-front payment, McCool Tr. at 244, 292, and Defendant's expert, Stephen Atkinson, that no up-front-payment would have

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[3] Similar testimony was also elicited at the 1996 trial.

been commanded for the '634 technology. Atkinson Tr. at 1684, 1690, 1697.

15. The evidence presented at trial supports the conclusion that a reasonable up-front payment for the '634 technology would have been in the range of $50,000 to $150,000. Alpert Tr. at 92-93 and 143; Caruthers Tr. at 2308.

16. Therefore, had Cyanamid and the University engaged in negotiations for exclusive rights to '634 technology in 1981, I find the University would have secured an up-front payment for such rights of $100,000 from Cyanamid.

Reasonable Royalty.

17. In the hypothetical situation where Cyanamid and the University would have negotiated an exclusive license of the '634 Patent technology in 1981, I find that license would have been based on a percentage of Materna net sales. Rubinfeld Tr. at 647-650. Alpert Tr. at 92-93; McCool Tr. at 241-247.

18. Plaintiffs' expert, Shannon McCool, testified a 12% royalty rate would have been reasonable in 1981 for an exclusive license of the '634 technology to Cyanamid. McCool Tr. at 241-244.

19. Mr. Alpert testified that he would have expected to negotiate at least a 10% royalty rate in 1981 for an exclusive license. Alpert Tr. at 92.

20. Mr. Damson testified that the Plaintiffs would have obtained a 12% royalty in 1981 for an exclusive license. Damson Tr. (5/14/96) at 1482-1485, 1491- 1493.

21. Defendant's expert, Stephen Atkinson, testified that the Plaintiffs would have received no more than 0.5% royalty in 1981 for an exclusive license. Atkinson Tr. at 1656-1657.

22. For the reasons set forth at pp. 1239-40 of my Preliminary Opinion, I decline to adopt any one of these experts' hypotheses concerning the reasonable royalty rate that would have been negotiated under the "usual and customary arrangements" that existed between university researchers and manufacturers in the 1981 time period. As previously noted, Mr. Atkinson failed in his analysis to consider either

the actual facts that would have informed the hypothetical license negotiations in 1981 or the players who would have participated in them. Atkinson Tr. at 1730-1731, 1753, 1760-1761. Most importantly, Mr. Atkinson refused even to consider, given the requisite assumption that the University would have wanted to sell the technology, that Cyanamid would have been willing to pay at least something to prevent the University from selling the **[1195]** technology to a competitor. Atkinson Tr. at 1742, 1760, 1799. On the other hand, the evidence also established that Dr. Allen, in the 1981 timeframe, had never secured more than a 6% royalty rate for any of his inventions, nor had UPI secured a rate higher than 6% for the University or any of its other clients. *Cyanamid V*, 153 F.Supp.2d at 1239-40. These facts cast doubt on the projections of Messrs. McCool, Alpert and Damson as to the size of the royalty rate the University could reasonably have expected for the '634 Patent technology in 1981.

23. Considering the "usual and customary arrangements" that existed between university researchers and pharmaceutical companies generally in the 1981 time period, the actual relationship as it existed between Dr. Allen, the University, UPI and Cyanamid, and considering the unique value to Cyanamid of securing exclusive rights to the '634 Patent technology, and weighing all of the evidence presented by the fact and expert witnesses identified above, I find that in 1981, the University and Cyanamid would have negotiated a 6% royalty rate for an exclusive license of the '634 technology.

Royalty Payment Start Date.

24. The start date for the payment of royalties by Cyanamid to the University for an exclusive license to the '634 technology would have been February 14, 1984, the date of the issuance of the '634 Patent. *See* Ex. 234A.

Royalty Payment End Date.

25. As set forth at page 1240 of the Preliminary Opinion, I was unpersuaded by Plaintiffs' evidence that Cyanamid deliberately "tanked" Materna after that date such that it should reasonably be held to a standard of having continued

to pay royalties through the life of the patent even though Cyanamid, itself, derived no benefit from the patent after 1994. Given that all of the licenses about which there was testimony at trial included a termination provision, it is reasonable to assume a University-Cyanamid license would have included such a provision and that Cyanamid would have terminated the license at the end of 1994. Accordingly, I find the appropriate end date for the calculation of royalties would have been December 31, 1994.

Royalty Sales Base.

26. Considering the totality of the testimony of Messrs. Rubinfeld, McCool and Atkinson at trial, the exhibits offered and received through them, the deposition testimony of Mr. McPike and the arguments of counsel, I find the royalty sales base of Materna to which the hypothetical 6% royalty rate would have applied would have included domestic as well as U.S.-sourced international sales of Materna. *E.g.*, Rubinfeld Tr. at 648; Ex. 752; McPike Depo. at 135- 136. *See Cyanamid V*, 153 F.Supp.2d at 1240.

27. The computation of U.S.-sourced international sales figures is problematic given Cyanamid's failure or inability to produce foreign sales data for Materna before 1995.[4] The parties devoted considerable time and energy at trial and in supplemental materials arguing the reliability and use of IMS Global Health Care ("IMS") sales data to calculate these figures. *See* Pls.' Corrected Proposed Findings and Conclusions (accepted for filing **[1196]** Nov. 7, 2001) and Cyanamid's Response to Correction to Pls.' Proposed Findings and Conclusions, etc. (filed Nov. 19, 2001) at pp. 2-6.

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[4] In my Preliminary Opinion, I wrote actual Cyanamid sales figures would be used for any years between 1984 and 1994 in which such data was disclosed to Plaintiffs, and IMS figures would be used for any years in which they were not. *Cyanamid V* at 1240. Because no actual sales data were provided for the relevant time period, I have no choice but to use the IMS numbers.

28. IMS Global Health Care ("IMS") is a company that collects pharmaceutical industry data and resells it to pharmaceutical companies in many different forms. McCool Tr. at 297. IMS collects and resells data concerning both domestic and foreign sales of pharmaceutical products including Materna. McCool Tr. at 315.

29. The dispute as it has developed through trial and since is the appropriateness of Plaintiff's expert McCool's reliance on IMS *trade-level* data to calculate Cyanamid's U.S.-sourced international sales figures rather than IMS "*ex-manufacturer*" level data that Cyanamid says more accurately represent actual sales revenue to the manufacturer. Trade-level IMS data reflects revenues received by the wholesaler, and, Cyanamid maintains, overstates revenues actually received by the manufacturer by 5-7%. Cyanamid then concludes that I should reduce McCool's numbers for U.S.-sourced foreign Materna sales by 7%. Cyanamid's Objections to Pls.' Proposed Findings & Conclusions at p. 30. At trial, McCool conceded IMS trade-level data is typically 5-7% higher than IMS ex-manufacturer level data, but explained that, because of prompt-payment incentives and discounts offered by manufacturers, IMS ex-manufacturer data tends to overstate actual revenue by about the same 5- 7% margin. McCool, Tr. at 537-39. "[T]he use of trade-level data," McCool concluded, "for practical purposes tends to offset that." Tr. at 539.

30. McCool has substantial work and related professional experience with the use and interpretation of IMS data in the pharmaceutical industry, and I found his testimony on the use of trade-level versus ex-manufacturer level IMS data to calculate actual manufacturer revenues credible. I decline to reduce McCool's U.S.-sourced foreign Materna sales figures by 7%, particularly in light of the fact that it was Cyanamid's failure to produce *actual* sales figures that necessitated resorting to IMS figures in the first place.

31. The appropriate source of domestic net sales of Materna are those figures generated by Cyanamid itself.

CONCLUSIONS OF LAW REGARDING FRAUD DAMAGES.

32. I have previously found Cyanamid liable to Plaintiffs for fraudulent non- disclosure. *Cyanamid IV*, 105 F.Supp.2d at 1183.

33. Although there is no Colorado law specifically governing how I am to measure damages under the circumstances, the Federal Circuit has instructed that the only proper measure of fraud damages in this case is the "payment that Cyanamid would have made to secure the doctors' cooperation in filing the required documents with the PTO, an assignment of ownership rights and/or an exclusive license from the University." *Cyanamid*, 196 F.3d at 1374. For the present purposes, I conclude the proper approach to measuring damages for fraud is the reasonable royalty the University could have secured in negotiations with Cyanamid in late 1981 for an exclusive license from the University of the '634 Patent technology.

34. In determining the amount of damages, the Federal Circuit has instructed me to consider the "usual and customary arrangements at the time of the filing of the patent application" in December 1981. *Id.*

35. Both Plaintiffs and Cyanamid presented considerable evidence at trial on the issue of the "usual and customary arrangements" **[1197]** in the early 1980's as it would have pertained to royalty negotiations for the '634 patent technology. For example, several expert witnesses testified regarding the issue (Messrs. Damson, McCool, and Atkinson, as well as Dr. Rubinfeld) and hundreds of University/UPI and Cyanamid licenses were submitted at trial. *E.g.*, Exs. 721, 1945 and 1946. While not endorsing all of the testimony and evidence before me, I nonetheless was informed by it in reaching my findings and conclusions regarding the appropriate royalty rate.

36. In determining a reasonable royalty, I considered what would have occurred in a "hypothetical negotiation" for exclusive rights to the '634 patent technology in late 1981. *See, e.g., Fromson v. Western Litho Plate & Supply Co.*, 853

F.2d 1568, 1574 (Fed.Cir.1988); *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158-59 (6th Cir.1978).

37. A reasonable royalty is determined by considering a hypothetical negotiation between a "willing" licensor and a "willing" licensee. *See, e.g., Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554 (Fed.Cir.1995) (en banc); *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895, 898-901 (Fed.Cir.1986).

38. A hypothetical negotiation employed after litigation assumes that the patent is valid. *See Northlake Mktg. & Supply, Inc. v. Glaverbel, S.A.*, 72 F.Supp.2d 893, 902 (N.D.Ill.1999) ("Such a reasonable royalty is determined based upon a hypothetical negotiation between the patent owner and the infringer ... with both parties to the negotiation assuming that the patent is valid ...."); *Procter & Gamble Co. v. Paragon Trade Brands, Inc.*, 989 F.Supp. 547, 614 (D.Del.1997) (to create "fiction" associated with hypothetical reasonable royalty includes underlying assumption that "patented claims at issue are deemed unquestionably valid and enforceable."); *accord Schneider (Europe) AG v. SciMed Life Systems, Inc.*, 852 F.Supp. 813, 860 (D.Minn.1994); *Syntex (U.S.A.) Inc. v. Paragon Optical, Inc.*, 7 U.S.P.Q.2D (BNA) 1001, 1027, 1987 WL 124333 (D.Ariz.1987).

39. A hypothetical negotiation should take into account the actual facts as they occurred in the matter both before and after the hypothetical negotiations would occur. *Sinclair Ref. Co. v. Jenkins Petroleum Process Co.*, 289 U.S. 689, 698-99, 53 S.Ct. 736, 77 L.Ed. 1449 (1933) (referring to later experiences as a "book of wisdom" which can correct uncertainties present at the time of hypothetical negotiation).

40. Based on the findings enumerated above, I conclude that in late 1981, a "reasonable royalty" rate of 6% would have been negotiated by UPI, on behalf of the University of Colorado, with Cyanamid for exclusive rights to the '634 Patent technology. I also find that a license agreement between the parties would have been exclusive and would have included a $100,000 up- front payment, would have been ap-

plicable to both domestic and U.S.sourced international sales of reformulated Materna, and would have run from February 14, 1984 to December 31, 1994.

PRIOR ART.

41. For my findings and conclusions on Cyanamid's argument that Plaintiffs' fraud damages should be zero because the '634 Patent was valueless by virtue of "prior art," I refer generally to the text at *Cyanamid V*, 153 F.Supp.2d at 1240.

42. I note that Cyanamid in this case failed to plead the affirmative defense of "invalidity" or "prior art." *See* Answer dated October 7, 1993, Answer to the First Amended Complaint dated April 1, 1994, **[1198]** Answer to the Second Amended Complaint dated October 17, 1994, Stipulated Pre-Trial Order dated July 31, 1995 and Amended Stipulated Pre-Trial Order dated February 23, 1996.

43. In December 1981, Cyanamid submitted a patent application to the PTO and, as part of that application, disavowed, under oath, that any invalidating prior art existed. Exs. 189A and 190. Cyanamid submitted a second affidavit in 1983 to the same effect. Ex. 189A, p. 38.

44. In 1984, in part as a result of Cyanamid's application and representations made by Cyanamid to the PTO that no invalidating prior art existed, the PTO issued the '634 Patent to Cyanamid. Ex. 234A.

45. After the '634 Patent issued, Cyanamid asserted its rights under the '634 Patent against at least six generic competitors of Materna through cease and desist letters, injunctive complaints and patent infringement lawsuits. Exs. 245, 519, 520, 523, 527, and 528. In each of these cases brought by Cyanamid to enforce the '634 Patent, Cyanamid alleged that the '634 Patent was valid and legally issued to Cyanamid. Exs. 245, 519, 520, 523, 527 and 528.

46. Since 1984 and through the pendency of this action, Cyanamid has insisted in this court and at least five other federal courts that the '634 Patent was valid and rightfully Cyanamid's. Exs. 519, 520, 523, 527 and 528; *see* Daniel

Thomasch letter to Glenn Beaton dated November 29, 1993 at p. 5, Exhibit D to Plaintiffs' Motion to Compel filed December 15, 1993 ("Cyanamid contends that Dr. Ellenbogen is the only individual that conceived of the invention ... [N]either party is currently alleging that the Patent is invalid ..."). Indeed, as recently as the hearing on Plaintiffs' Motion for Entry of Judgment on February 29, 2000, Cyanamid argued the '634 Patent was valid and that Dr. Ellenbogen was the true and sole inventor of the '634 technology. *See generally* Transcript of February 29, 2000 hearing on Plaintiffs' Motion for Entry of Judgment at 25-47.

47. Cyanamid is estopped from arguing that the '634 Patent is invalid as a factor to be considered in determining the value, to Cyanamid, of the ' 634 Patent technology in 1981. *See Data Gen. Corp. v. G.S.A.*, 78 F.3d 1556, 1565 (Fed.Cir.1996) (party may be estopped from taking contrary positions in subsequent legal proceedings); *see also In re Kathawala*, 9 F.3d 942, 945 (Fed.Cir.1993) (noting a patentee "cannot claim exemption from the consequences of his own actions"); *Shramrock Tech., Inc. v. Medical Sterilization, Inc.*, 903 F.2d 789, 793 (Fed.Cir.1990) (estoppel may be applied to prevent one from benefitting from his own wrong).

EXEMPLARY DAMAGES.

48. Under Colorado law, exemplary damages are awarded both to punish a fraudfeasor and to deter similar conduct in the future. *Lexton-Ancira Real Estate Fund, 1972 v. Heller*, 826 P.2d 819, 822 (Colo.1992) (purpose of exemplary damages is to punish and deter).

49. The University doctors are the true and sole inventors of the subject matter of the '634 Patent. *Cyanamid IV*, 105 F.Supp.2d at 1181.

50. The doctors wrote up the results of their studies in an article entitled "Inadequate Iron Absorption from Many Prenatal Multivitamin--Mineral Supplements" (the "Article"). *Cyanamid IV*, 105 F.Supp.2d at 1168-69.

51. The focal point of scientific interest in the Article was Table I, which presented the results of the doctors'

studies in a distinctive format with four main columns, **[1199]** nine subcolumns and 12 rows. *Cyanamid IV*, 105 F.Supp.2d at 1169.

52. As was the practice of Dr. Allen and Dr. Ellenbogen, a confidential courtesy copy of the Article was provided to Dr. Ellenbogen. *Id.*

53. Within days of receiving the Article, Dr. Ellenbogen filled out a "Record of Inventorship" claiming sole inventorship of the '634 Patent technology. *Id.*

54. Without informing the doctors, Cyanamid copied and plagiarized significant portions of the Article, including Table I, into a patent application. *Id.* at 1178-79 & n. 9 (patent application was "derived virtually wholesale from the [doctors'] Article"; application includes "an almost verbatim recitation of the 'Methods' section of the Article"; different typeface and left justification of retyped words and acronyms, gaps and breaks where line running across columns was cut and numerous other indications "clearly and convincingly supported a finding" that Table I and Figures 1-4 were altered by Cyanamid and then photocopied into the patent application).

55. Despite such conduct, in its Answer filed in this action, Cyanamid denied it copied, plagiarized and otherwise lifted without permission large portions of the doctors' Article. *See* Answer at ¶ 25.

56. As part of the patent application, Dr. Ellenbogen completed an affidavit of inventorship, swearing he was the true and sole inventor of the technology. *Cyanamid IV*, 105 F.Supp.2d at 1169.

57. Cyanamid's patent application filed in December 1981, claimed exclusive rights to the reformulation and named Dr. Ellenbogen as its sole inventor. *Id.*

58. The '634 Patent issued to Cyanamid in 1984. *Id.*

59. From 1984 until 1993, Cyanamid enforced its patent rights against generic competitors. *Id.*

60. Notwithstanding the doctors' personal and professional relationship with Dr. Ellenbogen, and in part, to se-

cure the doctor's continued cooperation and work, neither Dr. Ellenbogen nor Cyanamid mentioned anything about the patent application, the filing of an affidavit in support of it crediting Dr. Ellenbogen with instigating and supervising all of the studies, the issuance of the Patent itself, the award given Dr. Ellenbogen for being named the inventor on a successful patent, or the civil enforcement and cease and desist actions brought by Cyanamid against generic competitors. *Id.* Based on this conduct, I find Cyanamid betrayed the doctors' trust, exploited their work for pecuniary gain and thwarted their intent that their discovery inure to the benefit of the public generally--not just Cyanamid. *Cyanamid III*, 974 F.Supp. at 1353- 1354, 1357.

61. I again find beyond a reasonable doubt that Cyanamid's clandestine and deceptive conduct relating to the application for and issuance of the '634 Patent, together with its exploitation of the doctors for its own gain, was attended by circumstances of fraud, malice and willful and wanton misconduct and that Drs. Allen and Seligman are entitled to an award of exemplary damages. C.R.S. § 13-21-102(1)(a).

62. Accordingly, I reinstate my earlier exemplary damage award and order Cyanamid to pay each Doctor $500,000 in exemplary damages.

EQUITABLE RELIEF.

63. As set forth in my Preliminary Opinion, evidence on damages and equitable remedies was reopened on remand. **[1200]** *Cyanamid V*, 153 F.Supp.2d at 1234-37. This new evidence, together with the testimony of numerous additional fact and expert witnesses presented for the first time by both sides at the retrial, was sufficient to allow for the quantification of value/profits realized by Cyanamid attributable to the wrongfully obtained and enforced '634 Patent. *Id.* at 1237. *See Cyanamid IV*, 105 F.Supp.2d at 1184-85 (the question of the proper amount, if any, Cyanamid should be required as a matter of equity to disgorge is one that will be decided in the proceedings related to the retrial of damages issues and related equitable remedies).

Colorado Law Allows for the Award of Both Legal and Equitable Remedies under the Circumstances Present.

64. As the Federal Circuit specifically recognized in *Cyanamid*, 196 F.3d at 1371 and 1374, Plaintiffs' state-law claims for fraud and unjust enrichment are governed by Colorado law, as long as federal patent standards of inventorship are applied in determining liability. *Cyanamid V*, 153 F.Supp.2d at 1243. I applied those federal standards of inventorship in *Cyanamid IV*, 105 F.Supp.2d at 1176-82, again finding Cyanamid liable to Plaintiffs for fraud and unjust enrichment. *Id.* at 1183-85.

65. My analysis of the remedies Colorado law affords a plaintiff under the present circumstances is set forth fully in my Preliminary Opinion, and will not be repeated here. See *Cyanamid V*, 153 F.Supp.2d at 1242-44 (citing *EarthInfo, Inc. v. Hydrosphere Resource Consultants, Inc.*, 900 P.2d 113, 118 (Colo.1995) and Dobbs, *Law of Remedies*, § 4, 1(1) and finding Colorado law recognizes applicability of benefits-based approach to equitable relief under certain circumstances and concluding restitution or disgorgement of profits may be appropriate where defendant gains more from its wrongful misconduct than plaintiff loses). Here, where the very method used to assess what Plaintiffs "lost" presumes away an integral part of that loss (i.e., the prerogative *not* to patent) a benefits-based approach to relief is appropriate.

66. As set forth in my opinion on liability issues on remand and discussed in detail in my Preliminary Opinion on damages issues, the unfair and unauthorized benefit secured by Cyanamid was not its use of the Doctors' reformulation idea or manufacture and sale of reformulated Materna, but the right to exclude others from doing so. *Cyanamid IV*, 105 F.Supp.2d at 1184, *Cyanamid V*, 153 F. Supp.2d at 1241-42, 1244-45. Securing this right was directly contrary to the Doctors' intent and deprived them of their prerogative as scientists, and the University of its prerogative as an academic and research institution, not to have their ideas monopolized by a single entity for greatest financial gain, but to

allow them to "inure to the good of society" generally. *Cyanamid IV*, 105 F.Supp.2d at 1175 (citing *Blonder- Tongue La. v. University of Illinois Found.*, 402 U.S. 313, 345, 91 S.Ct. 1434, 28 L.Ed.2d 788 (1971)); *see Cyanamid V*, 153 F.Supp.2d at 1242 & n. 8 (noting that, given the general rule that " 'ideas in the public domain inure to the good of society,' " there clearly is no requirement that all patentable ideas actually be patented). The loss of this prerogative is not compensable by any analysis of what the Doctors "could have" commanded for a "willing sale" of the technology, because such an analysis presumes that loss away. *Cyanamid V* at 1242. A better approach, and one afforded me as a matter of equity under Colorado law, is to focus on the benefit Cyanamid gained as a result of its misconduct. Because the fraudulent patenting of another's technology allowed Cyanamid to realize profits it would not **[1201]** have realized but for its misconduct, I concluded the retention of those profits would be unjust under Colorado law. *Cyanamid IV* at 1184, *Cyanamid V* at 1244, 1245.

67. Contrary to Cyanamid's suggestion in its Objections to Plaintiffs' Proposed Findings/Conclusions, I reiterate that my articulation of both legal and equitable remedies in this case is mindful of the principle against double recovery, and does not contravene my preliminary finding that overlapping remedies cannot be awarded. Given that Cyanamid's ill-gotten gains from their wrongful conduct exceed Plaintiffs' actual loss as a result of Cyanamid's fraud, Plaintiffs' combined remedy on their fraud and unjust enrichment claims "can be quantified in terms of the price the University could have commanded in the hypothetical 1981 transaction for exclusivity rights *plus* the difference between Cyanamid's ensuing profits less that purchase price, *or simply, Cyanamid's patent-related profits* [assuming the latter exceed the former]." *Cyanamid V*, 153 F.Supp.2d at 1246 (emphasis added), *c.f.* Cyanamid's Objections to Pls.' Proposed Findings/Conclusions at 56-57.

68. Based on my findings of liability and the extreme culpability of Dr. Ellenbogen and Cyanamid in 1981, and

continuing throughout the pendency of the patent application and thereafter, together with the wealth of new evidence establishing that Cyanamid realized substantial value in the form of exclusivity-based profits as a result of its misconduct, I find and conclude that Cyanamid's retention of those profits would be unjust and that Cyanamid should be ordered to disgorge them. *Cyanamid V*, 153 F.Supp.2d at 1244. My analysis in this regard was informed by my knowledge and review of Colorado law and the persuasive testimony of Plaintiffs' expert, Professor Daniel Rubinfeld, at the damages retrial. *Id.* The remedy is separate and independent from Plaintiffs' remedy at law, in that it is premised on the benefits realized by Cyanamid as a result of its misconduct, rather than the University's demonstrated financial loss. *Id.*

69. Cyanamid's unjust enrichment is determined by calculating profits--sales less production and marketing/distribution costs--attributable to the right to exclude generic competition gained from the '634 Patent (the "Patent-Related Profits"). *Cyanamid V*, 153 F.Supp.2d at 1245, Rubinfeld Tr. at 653, 662; Ex. 1870. In arriving at the Patent-Related Profits, Professor Rubinfeld properly excluded profits Cyanamid was able to earn from sales of Materna without the use of the '634 Patent. Rubinfeld Tr. at 653.

70. As stated in my Preliminary Opinion, I found Professor Rubinfeld's analysis competent and his presentation at trial persuasive. Given his background and experience, significant weight is accorded his analysis and calculation of the Patent-Related Profits. *See Cyanamid V*, 153 F.Supp.2d at 1245.

Patent-Related Profits.

71. The prescription prenatal multivitamin market is and has been highly competitive. Ex. 605, at A068561.

72. The value of the '634 Patent can be properly quantified by evaluating the performance of Stuartnatal 1+ 1, which competed head-to-head with Materna but which did not have the protection of a patent. Rubinfeld Tr. at 652-68,

Ex. 732, at A063883. *See Cyanamid V*, 153 F.Supp.2d at 1245.

73. During the relevant time period, Stuartnatal 1+ 1 was a co-industry leader with Materna of the prenatal multivitamin market. *E.g.*, Cyanamid 1990 Marketing Plan, Ex. 313, at A001403, *see* Rubinfeld Tr. at 654-656.

[1202] 74. Generic competition tends to be targeted at the most successful branded products in a given market. Rubinfeld Tr. at 656; Ex. 653, at A068545; Damson Tr. (5/14/96) at 1486. This was true in the prenatal multivitamin market. Ex. 605, at A068565; Ex. 653, at 068533, 068541. Consequently, when there is no patent protection, the market leaders typically have the highest substitution rate. Ex. 653, at A068541.

75. The benefits of patent protection against generic competition are amply illustrated by the reaction of generic competitors to Cyanamid's 1994 decision to stop enforcing, and promoting Materna on the basis of, the '634 Patent. Ex. 579 (internal memo referencing specter of "prior art" invalidating patent and requesting removal of patent marking from Materna product and sales literature),[5] Ex. 681, at A068497 (1998 Cyanamid marketing report: when this [litigation concerning ownership and inventorship of Cyanamid's patent] was made public, generics quickly cropped up against "Materna"); *see* Ex. 677, at A068321 ("The only deterrent to this behavior [generic substitution] to date has been to secure patented status for a formulation."); Ex. 605, at A068577 (1995 Strategic Options Report: "While the outcome of the [instant] patent litigation is ... unknown, it could have significant financial implications on Materna's future income stream. Additionally, as the litigation becomes more public should an unfavorable decision be rendered generic intrusion will undoubtedly become more widespread for the

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[5] As set forth above, notwithstanding the fact that this action was pending at the time, Cyanamid did not raise the issue of "prior art" in this case until the damages retrial in 2001.

brand."); Ex. 653, at A068545 ("If the outcome [patent litigation] is unfavorable it could have significant financial implications for Materna's future income stream, by providing [t]he entree for more generic competitors."); Ex. 585, at A063856 ("Without the patent, substitution will eventually become an issue and affect the brand's long-term growth. Once the litigation is public, Materna will become increasingly more vulnerable to substitution, especially once it becomes a dominant brand.").

76. Stuartnatal 1+ 1 is a proper comparison product for determining the impact of generic substitution on a non-patent protected Materna in a "but for" world, that is, a hypothetical world in which Cyanamid would not have the '634 Patent to shield Materna from competition. Rubinfeld Tr. at 654, 656; Ex. 313, at A001403.

77. In 1994, Stuartnatal 1+ 1 had a 65 percent substitution rate. Ex. 605 (6/95 Strategic Options Report for 1996-98) at A068565. At the same time, and as a result of the '634 Patent, Materna's substitution rate was significantly less. *See* Ex. 605 ("Up until now [6/95], Materna has been protected from generic substitution by its patent status which is based on the ratio of magnesium to calcium and the ratio's beneficial impact on iron absorption.").

78. I was persuaded by Dr. Rubinfeld's testimony that it would be appropriate to assume that in the "but for" world of an unpatented Materna, the generic substitution rate for Materna would be substantially similar to the actual substitution rate for Stuartnatal 1+ 1. *See* Rubinfeld Tr. at 659.

79. Based on the evidence presented at trial and the opinions and analysis of Dr. Rubinfeld, I find the time frame for determining unjust enrichment should be between February 14, 1984, when the patent **[1203]** was issued, and the end of 1994, when this litigation as well as other challenges to the '634 Patent caused Cyanamid to stop enforcing it.

80. Unjust enrichment calculations are limited to domestic sales of Materna because the patent did not confer a right to exclude generic competition internationally. Rubinfeld Tr. at 665.

81. I find that Plaintiffs' analysis (provided through Professor Rubinfeld) reasonably, accurately, and conservatively determined the Patent-Related Profits, which I find to be $23,243,228 (without prejudgment interest) for the period February 14, 1984 to December 31, 1994. Rubinfeld Tr. at 643-644, 664; Ex. 709, at 32. These Patent-Related Profits properly exclude amounts Cyanamid paid in production, marketing, distribution and other variable costs associated with the manufacture and sale of Cyanamid under the '634 Patent. Ex. 1870.

CONCLUSIONS OF LAW REGARDING UNJUST ENRICHMENT.

82. Once the federal standards for inventorship were applied in determining Cyanamid's liability under a theory of unjust enrichment, it is Colorado law that governs the concept and analysis of what remedies may be appropriate. *See Cyanamid*, 196 F.3d at 1374.

83. The power to fashion equitable remedies lies within the discretion of the trial court. *La Plata Med. Ctr. Assocs. v. United Bank of Durango*, 857 P.2d 410, 420 (Colo.1993) (citing Restatement (Second) of Contracts § 357 cmt. c (1981)); *see EarthInfo*, at 119. In exercising this discretion, the trial court "has the power to choose between two or more courses of action and is therefore not bound in all cases to select one over the other." *Colorado Nat'l Bank of Denver v. Friedman*, 846 P.2d 159, 166 (Colo.1993).

84. The scope of the remedy for unjust enrichment "is broad, cutting across both contract and tort law, with its application guided by the underlying principle of avoiding the unjust enrichment of one party at the expense of another." *Cablevision of Breckenridge, Inc. v. Tannhauser Condominium Ass'n*, 649 P.2d 1093, 1097 (Colo.1982) (en banc).

85. In determining whether restitution of profits/disgorgement is appropriate, the Colorado Supreme Court has stated:

> [T]he court must resort to general considerations of fairness, taking into account the nature of the de-

> fendant's wrong, the relative extent of his or her contribution, and the feasibility of separating this from the contribution traceable to the plaintiff's interest. 1 George E. Palmer, *The Law of Restitution* § 2.12 at 161 (1978) .... Thus, the more culpable the defendant's behavior, and the more direct the connection between the profits and the wrongdoing, the more likely that the plaintiff can recover all defendant's profits. *See, e.g.*, Douglas Laycock, *The Scope and Significance of Restitution*, 67 Tex. L.Rev. 1277, 1289 (1989). The trial court must ultimately decide whether the whole circumstances of a case point to the conclusion that the defendant's retention of any profit is unjust.

EarthInfo, 900 P.2d at 119.

86. After the first trial, I concluded that Cyanamid was liable for unjust enrichment under Colorado law, because it misappropriated and profited from the doctors' invention under circumstances that it would be inequitable for Cyanamid to retain this benefit. *Cyanamid III*, 974 F.Supp. at 1354-55; *see Cablevision*, 649 P.2d at 1097 *cited with approval in Cyanamid*, 196 F.3d at 1374 ("This court notes, **[1204]** however, that [under *Cablevision*] a defendant who uses a benefit provided by the plaintiff in an unauthorized and unfair manner may be liable in Colorado for unjust enrichment.").

87. On remand, I again concluded that Cyanamid was liable for unjust enrichment because "a benefit was conferred on Cyanamid by the Plaintiffs under circumstances that make its retention, without compensation, inequitable." *See Cyanamid IV*, 105 F.Supp.2d at 1184, *see also id.* at 1183 (describing some of the benefits Plaintiffs conferred upon Cyanamid).

88. Each of the factual findings I made underlying that conclusion was based on substantial and credible evidence. I re-incorporate those findings here.

89. Based on my findings of liability and the extreme culpability of Dr. Ellenbogen and Cyanamid in 1981, and

continuing throughout the pendency of the patent application and thereafter, together with the wealth of new evidence establishing that Cyanamid realized substantial value in the form of exclusivity-based profits as a result of its misconduct, I find and conclude that Cyanamid's retention of those profits would be unjust.

90. I conclude that Cyanamid's Patent-Related Profits were $23,243,228 for the period February 14, 1984 to December 31, 1994, without prejudgment interest. Rubinfeld Tr. at 664; Ex. 709 at 32. These Patent-Related Profits properly exclude amounts Cyanamid paid in production, marketing, distribution and other variable costs associated with the manufacture and sale of Cyanamid under the '634 Patent. *See Cyanamid V*, 153 F.Supp.2d at 1244, Ex. 709, at 32; Rubinfeld Tr. at 664.

OVERLAP BETWEEN EQUITABLE AND LEGAL REMEDIES.

91. I have determined that Cyanamid is liable to Plaintiffs under both state-law legal and equitable theories of relief--fraud and unjust enrichment.

92. Plaintiffs' fraud damages were measured in terms of the financial opportunity lost in 1981 when Cyanamid acted secretly to patent the Doctors' reformulation concepts rather than pay the University for exclusive rights to them. As explained in my Preliminary Opinion, however, this approach not only fails fully to compensate Plaintiffs for that which they lost as a result of Cyanamid's fraud, *see Cyanamid V*, at 1241-42 (Plaintiffs were deprived not only of their hypothetical right to sell exclusive rights to their invention but also their right *not* to do so), but also allows Defendants to retain the profits earned as a result of a hypothetical "deal" it was clearly established would never have been struck. *See id.* (benefits-based approach to remedy appropriate where benefit to defendant wrongdoer exceeds loss to plaintiff). Under these circumstances, Colorado law allows for the award of both legal and equitable remedies, as long as the principle against double recovery is taken into consid-

eration. *See id.* at 1243-44 (citing *EarthInfo*, 900 P.2d at 119 and caselaw/materials cited therein).

93. No easy formulas exist for determining when restitution of profits realized by a party in a given case is warranted. Because it is an equitable remedy, however, Colorado law provides that it is left firmly in the trial court's discretion to fashion. *Cyanamid V*, at 1243.

94. Based on the limited nature of the evidence presented at the first trial on the issue of damages, I determined that Plaintiffs' damages and Cyanamid's gains coincided--Cyanamid's "gain" was the amount it did not pay Plaintiffs for exclusive rights to the reformulation technology. **[1205]** *Cyanamid III*, 974 F.Supp. at 1359, *discussed in Cyanamid V*, 153 F.Supp.2d at 1234.

95. The issue of disgorgement was not fully litigated in the first trial, however, largely because of Cyanamid's failure, in discovery leading up to the first trial, to produce profits and similar evidence related to the value of the '634 Patent on grounds such evidence was irrelevant. *Cyanamid V*, 153 F.Supp.2d at 1234. As I have noted above, however, substantially more and different evidence was presented at the damages retrial, in large part because Cyanamid for the first time disclosed marketing and financial data relating to Materna and the value of the '634 Patent.

96. Based on this new evidence (as well as on the evidence from the first trial), I find and conclude that there is a significant difference between, on the one hand, Plaintiffs' loss as measured by Cyanamid's failure to secure and pay for exclusive rights to the '634 Patent technology before patenting it and, on the other hand, Cyanamid's gains as a measure of those profits it earned that were attributable to the fraudulently obtained patent.

97. Fundamental to any remedial scheme is the proposition that a plaintiff generally may not recover twice for the same injury. *E.g., MidAmerica Fed. Sav. & Loan Ass'n v. Shearson/American Express, Inc.*, 962 F.2d 1470, 1473 (10th Cir.1992). This concept is consistent with the Colorado Supreme Court's admonition in *EarthInfo* that it may be ap-

propriate for a court to impose upon the wrongdoer the burden of proving offsets to profits that will be disgorged or, put differently, the risk of not identifying all costs and other offsets used to determine the wrongdoer's true "profits." *See EarthInfo*, 900 P.2d at 120-21.

98. The legal and equitable remedies overlap in this case. I find the principle against double recovery would preclude an award to Plaintiffs which totaled both the hypothetical price Cyanamid would have paid for exclusivity rights in 1981 *and* the gain Cyanamid realized as a result of its fraudulent and inequitable conduct. *Discussed in Cyanamid V*, 153 F.Supp.2d at 1245-46.

99. The evidence clearly establishes that Cyanamid's gains from its misconduct exceed the Plaintiffs' losses as measured by the less-than-comprehensive hypothetical-negotiation analysis, which is intended to measure Plaintiffs' theoretical actual damages only. *See, e.g., Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed.Cir.1996) (noting that hypothetical-negotiation damages analysis, because it assumes willing buyer and willing seller when that assumption is contrary to actual facts, "risks creation of the perception that blatant, blind appropriation of inventions patented by individual, non- manufacturing inventors is the profitable, can't-lose course").

100. Under these circumstances, Colorado law recognizes my prerogative, in equity, to compel Cyanamid to disgorge that gain.

FINDINGS OF FACT AND CONCLUSIONS OF LAW REGARDING FEDERAL EQUITABLE REMEDIES/CONSTRUCTIVE TRUST.

101. In *Cyanamid IV*, I concluded that the '634 Patent must be corrected to reflect that the doctors are the sole and true inventors of the '634 technology. 105 F.Supp.2d at 1185. I also concluded that Plaintiffs hold equitable title to the '634 Patent. *Id.*

102. Plaintiffs on remand argue that equitable remedies flow from these conclusions. I conclude that Plaintiffs'

status as the equitable title holders to the '634 Patent [1206] from 1984 forward constitutes a separate and independent ground for requiring Cyanamid to disgorge to Plaintiffs the profits it unjustly gained as the putative holder of the Patent--that is, the Patent- Related Profits. *Cyanamid V*, 153 F.Supp.2d at 1246.

103. The disgorgement of unjust enrichment I order under this theory is an alternative to the disgorgement of unjust enrichment I ordered under Colorado law. *See Arachnid, Inc. v. Merit Indus., Inc.*, 939 F.2d 1574 (Fed.Cir.1991).

104. In awarding to Plaintiffs the Patent-Related Profits to which they are entitled as equitable title holders of the '634 Patent, however, I reject Plaintiffs' argument in support of their request for imposition of a constructive trust on Cyanamid's Patent-Related Profits based on the analogy that Cyanamid was acting as a fiduciary to Plaintiffs during the time it held legal title to the '634 Patent.

CONCLUSIONS OF LAW REGARDING PREJUDGMENT INTEREST.

105. Colorado's prejudgment interest statute provides in relevant part:

> Interest shall be at the rate of eight percent per annum compounded annually for all moneys or the value of all property after they are wrongfully withheld or after they become due to the date of payment or to the date judgment is entered, whichever occurs first.

106. I award Plaintiffs prejudgment interest to be calculated at a rate of eight percent (8%) per annum, compounded annually pursuant to Colo.Rev.Stat. § 5-12-102(1)(b) (2000).

107. The appropriate start date for an award of prejudgment interest is the date the patent issued, February 14, 1984.

NOW THEREFORE I enter the following Orders:

I. ***Fraud Damages.***

Based on the sales figures presented at trial and compiled in Attachment 1 to Plaintiffs' Corrected Proposed Findings of Fact and Conclusions of Law, I find Cyanamid liable to the Plaintiffs for $ 22,546,000 in fraud damages (royalties at 6% from issuance of patent to December 31, 1994 with 8% interest through January 1, 2002) plus the additional prejudgment interest that has accrued from January 1, 2002 to the date of judgment.

II. ***Unjust Enrichment Remedy.***

I have found that Cyanamid was unjustly enriched by $23,243,228 (without prejudgment interest) at Plaintiffs' expense. Therefore, I find that on Plaintiffs' claim for unjust enrichment, Cyanamid is liable in the amount of $53,106,066 ($23,243,228 unjust enrichment calculated by Professor Rubinfeld using Cyanamid sales figures from issuance of patent to December 31, 1994 with 8% interest through January 1, 2002) plus the additional prejudgment interest that has accrued from January 1, 2002, to the date of judgment.

III. ***Elimination of Double Recovery: Overlap between Remedies.***

Because the amount to be disgorged as the remedy on Plaintiffs' claim for unjust enrichment is greater than Plaintiffs' fraud damages, and because I have found that the Plaintiffs are not entitled to double recovery for their fraud and unjust enrichment claims, Cyanamid is Ordered to pay to the Plaintiffs the amount of $53,106,066, which includes statutory prejudgment interest through January 1, 2002, plus additional prejudgment interest through the date of judgment.

[1207] IV. ***Exemplary Damages.***

I award Drs. Allen and Seligman $500,000 each in exemplary damages (for a total of $1,000,000).

APPENDIX C

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

THE UNIVERSITY OF COLORADO FOUNDATION, INC.; THE UNIVERSITY OF COLORADO, AN INSTITUTION OF THE STATE OF COLORADO; THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, A BODY CORPORATE OF THE STATE OF COLORADO; ROBERT H. ALLEN, AN INDIVIDUAL; AND PAUL A. SELIGMAN, AN INDIVIDUAL,
PLAINTIFFS,

V.

AMERICAN CYANAMID COMPANY, A MAINE CORPORATION, DEFENDANT.

No. CIV. A. 93-K-1657

July 26, 2001

[153 F. Supp. 2d 1231]

PRELIMINARY OPINION TO GUIDE FINDINGS OF FACT AND CONCLUSIONS OF LAW

KANE, Senior District Judge.

After an initial trial,[1] appeal to the Federal Circuit[2] and a bifurcation of liability and damages issues on remand,[3] this

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[1] The initial trial took place after I had issued my opinions in *University of Colo. Found., Inc. v. American Cyanamid*, 880 F. Supp. 1387 (D.Colo.1995) (*Cyanamid I*) (rejecting, as a matter of law, Plaintiffs' common law claim of conversion as well as Plaintiffs' claim for correction of patent under 35 U.S.C. § 256 but finding Plaintiffs had standing to pursue claims for equitable title/relief under Patent Act) and *University of Colo. Found., Inc. v. American Cyanamid Co.*, 902 F. Supp. 221 (D. Colo. 1995) (*Cyanamid II*) (on reconsideration of *Cyanamid I*, agreeing with Cy-

longstanding **[1233]** patent-related fraud and unjust enrichment action is before me for preliminary rulings to guide the preparation of final findings and conclusions as to the appropriate relief to be awarded Plaintiffs on their claims. I will address the major legal issues raised by the parties regarding the nature and scope of the remedies available on remand, and make various threshold factual and legal determinations to tailor the proposed findings and conclusions that will follow.

These threshold findings and conclusions culminate in a determination that the University is entitled to an amount of actual damages reflecting the 1981 world in which royalty rates and licensing fees would have been determined had the

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anamid that Plaintiffs' equitable title claim must fall with claim for relief under § 256 of Patent Act). *See University of Colo. Found. v. American Cyanamid Co.*, 974 F.Supp. 1339, 44 U.S.P.Q.2d 1231 (D.Colo.1997)(*Cyanamid III*).

[2] In a decision issued November 19, 1999, the Federal Circuit Court of Appeals affirmed in part and reversed in part my rulings in *Cyanamid I, II* and *III*, vacating certain of my findings and legal conclusions and remanding the case for further proceedings. *See University of Colo. Found., Inc. v. American Cyanamid Co.*, 196 F.3d 1366 (Fed.Cir.1999).

[3] On July 7, 2000, I issued a Memorandum Decision on Remand, bifurcating the issues of liability and damages. *University of Colorado Found. v. American Cyanamid Co.*, 105 F.Supp.2d 1164, 55 U.S.P.Q.2d 1909 (D.Colo.2000)(*Cyanamid IV*). In *Cyanamid IV*, I reiterated and supplemented my conclusions that University of Colorado Doctors Allen and Seligman were the true inventors of '634 Patent technology; that Cyanamid defrauded the University and the Doctors when it secretly patented their invention; and that Cyanamid had been unjustly enriched by its misconduct. In addition, and in accordance with the Federal Circuit's rulings on appeal, I also held that the Doctors were entitled under 35 U.S.C. § 256 to the substitution of their names on the Patent for that of the named inventor, Cyanamid's Dr. Ellenbogen, which, in turn, established the University's equitable title to the Patent. *Id.*, 105 F.Supp.2d at 1184.

Doctors and the University decided at that time to sell Cyanamid exclusivity rights to the '634 Patent technology, and that the University is entitled to equitable relief in the form of a disgorgement of Cyanamid's profits attributable to the exclusivity rights wrongfully secured and enforced against competitors. I find disgorgement is warranted as an exercise of my discretion under Colorado law based on the egregiousness of Cyanamid's misconduct, the unavailability without it of a complete remedy for Plaintiffs, and the fact that the financial gain realized by Cyanamid as a result of its misconduct exceeds the quantifiable financial loss to Plaintiffs.

I. *THE FEDERAL CIRCUIT'S MANDATE AND APPELLATE WAIVER.*

In its Motion Regarding Appropriate Scope of Damages Retrial on Remand (filed August 23, 2000) and again in its Trial Brief before the damages retrial, Cyanamid argues Plaintiffs cannot "renew claims previously tried to conclusion and not appealed," including Plaintiffs' "claim" for disgorgement, any "claim" for damages or other relief based on Cyanamid's alleged spoliation of evidence, and "any claim for punitive damages beyond what the Court awarded at the end of the initial trial." Def.'s Trial Br. at 5. I do not consider the latter two concerns to involve issues of waiver, or even consider them "claims." Generally, I agree both are beyond the scope of appropriate relief to be awarded on remand. "Damages" related to Cyanamid's alleged spoliation of evidence are more properly considered in Plaintiffs' Motion for Sanctions and have been deferred for consideration until after the issues on remand are fully addressed. I address punitive damages in a separate section below. Whether disgorgement of profits remains a viable remedy on Plaintiffs' claim for unjust enrichment is a more contentious issue, requiring some background before being addressed.

My Rulings in Cyanamid III.

In *Cyanamid III*, I analyzed the doctrine of unjust enrichment as recognized by Colorado courts in *Ninth Dist.*

Prod. Credit Ass'n v. Ed Duggan, Inc., 821 P.2d 788, 795 (Colo.1991)(en banc) and *Cablevision of Breckenridge, Inc. v. Tannhauser Condominium Ass'n*, 649 P.2d 1093, 1096-97 (Colo.1982)(en banc).[4] "The scope of the remedy for unjust enrichment [under Colorado law] 'is broad'," I determined, " 'cutting across both contract and tort law, with its application guided by the underlying principle of avoiding the unjust enrichment of one party at the expense of another.' " *Cyanamid III*, 974 F.Supp. at 1358 (quoting *Cablevision* at 1097 and citing the *Cablevision* court's reliance on Palmer, Law of Restitution § 1.1 (1978) and 66 Am.Jur.2d Restitution § 11).

[1234] Applying Colorado law, I determined Plaintiffs conferred a benefit on Cyanamid, which Cyanamid appreciated, under circumstances that rendered its retention by Cyanamid inequitable. *Cyanamid III*, 974 F.Supp. at 1354. The benefits realized by Cyanamid, I found,

> include Cyanamid's post-Patent profits attributable to the Patent, as well as any other industry or market advantages Cyanamid gained as a result of having the Patent. To prevent the injustice that would result if Cyanamid were permitted to retain these ill-gotten gains, the law of restitution would require me to order Cyanamid to disgorge them.

974 F.Supp. at 1358. I noted a dilemma exists when a plaintiff has also suffered a quantifiable and therefore compensable financial loss as a result of defendant's misconduct, raising the specter that the legal and equitable remedies may overlap in all or in part. 974 F.Supp. at 1359 (observing that fundamental to any remedial scheme is the principle that a plaintiff cannot recover twice for the same injury). While Plaintiffs claimed Cyanamid's profits were greater than their loss such that they were entitled to both compen-

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[4] On remand, I also found the Colorado Supreme Court's en banc decision in *EarthInfo, Inc. v. Hydrosphere Resource Consultants, Inc.*, 900 P.2d 113 (Colo.1995) instructive in this regard.

sation and disgorgement over and above the amount of that compensation, I found Plaintiffs had presented no profits-related evidence to support it. Instead, the only evidence presented was that Plaintiffs' loss and Cyanamid's benefit coincided--i.e., "Plaintiffs were damaged in the amount of the reasonable royalty or licensing fee they should have received for their idea and Cyanamid benefitted in that same amount by not having to pay." *Id. See also Cyanamid IV*, 105 F.Supp.2d at 1184.

The Federal Circuit's Rulings on Appeal.

On appeal, the Federal Circuit specifically observed that Cyanamid failed "to argue that the district court erred in any findings under its unjust enrichment analysis" and therefore "[declined to] review those findings." 196 F.3d at 1374. The Court recognized that "a defendant who uses a benefit provided by the plaintiff in an unauthorized and unfair manner may be liable in Colorado for unjust enrichment," *id.* (citing *Cablevision*), but vacated the judgment of liability for unjust enrichment entered in *Cyanamid III* because that claim, like the common law claim for fraud, "hinged" on a finding that the Doctors invented the subject matter of the '634 patent. *Id.*

On remand, Cyanamid argues the Federal Circuit's refusal to review my finding that Plaintiffs were not entitled to disgorgement renders it the law of the case, invoking the mandate rule of *Laitram Corp. v. NEC Corp.*, 115 F.3d 947, 951 (Fed.Cir.1997) (mandate limited to matters appealed, and on remand, district court cannot give relief beyond scope of mandate). Trial Br. of Cyanamid (filed 3/2/01) at p. 6. Specifically, Cyanamid contends the issue of disgorgement "w[as] fully litigated in the initial trial," was denied "based on a failure of proof," and was not appealed by Plaintiffs. *Id.*

Analysis.

As an initial matter, the issue of disgorgement was not fully litigated in the initial trial, largely because of Cyanamid's failure, in discovery leading up to the first trial, to produce profits and similar evidence related to the value of the '634 Patent to Plaintiffs on ground such evidence was

irrelevant. As such, it is not at all clear to me that the law of the case doctrine or mandate rule even apply. More important, however, is the principle that neither the law of the case doctrine nor the mandate rule precludes reconsideration of an issue such as disgorgement even if they were deemed to apply.

The law of the case doctrine and mandate rule are not "unassailable limit[**[1235]** s]" on a court's jurisdiction, but "prudential doctrines that direct a court's discretion." *Tronzo v. Biomet, Inc.*, 236 F.3d 1342, 1349 (Fed.Cir.2001). *See Mason v. Texaco*, 948 F.2d 1546, 1553 (10th Cir.1991)(citing *Messinger v. Anderson*, 225 U.S. 436, 444, 32 S.Ct. 739, 56 L.Ed. 1152 (1912)) (Holmes, J.)(doctrines "merely express[ ] the practice of courts generally to refuse to reopen what has been decided, not a limit to their power"); *see generally* 18 C. Wright, A. Miller & E. Cooper, Fed. Practice & Procedure § 4478 (West 1981)("although courts are often eager to avoid reconsideration of questions once decided in the same proceeding, it is clear that all federal courts retain power to reconsider if they wish"). It may be appropriate in some circumstances for a court to revisit an issue that would otherwise be deemed waived and beyond the scope of an appellate mandate. *Tronzo* at 1349. While such circumstances should be exceptional, courts will consider revisiting issues otherwise foreclosed where, for example, "there has been a substantial change in the evidence." *Id.* Such circumstances exist here.

After the Federal Circuit issued its decision and remanded this case for further proceedings, Plaintiffs filed a Motion for Entry of Judgment, arguing the Federal Circuit's mandate could be effected on the existing record as a matter of law. Specifically, Plaintiffs argued the record as it existed was adequate to establish that the Doctors were the true and sole inventors of the '634 Patent technology under federal patent law standards of inventorship without the need for a new trial or evidentiary hearing, which determination would warrant the reinstatement of both the liability and damages determination in *Cyanamid III* as a matter of

law. *See* Pls.' Mot. Entry of Judgment (filed 1/7/00) at p. 2, *discussed in Cyanamid IV*, 105 F.Supp.2d at 1174-75. In its response to Plaintiffs' Motion, Cyanamid agreed there was "no need to reopen the record on liability issues," but argued strenuously that "the procedural posture of this case on remand (where a determination of inventorship under the federal patent laws is the predicate for any liability) is *completely changed* from the procedural setting at trial (at which time all patent law claims had been dismissed)." Cyanamid's Mem. Law in Opp'n to Pls.' Mot. Entry Jm. (filed 2/3/00) at 2 (emphasis added). "[I]f damages are to be awarded," Cyanamid continued, "it would be an abuse of discretion to preclude Cyanamid from introducing new evidence on damages." *Id.* at 3.

After considering the parties' respective arguments, I agreed a redetermination of liability issues under federal patent standards of inventorship could be made under the existing record, but rejected Plaintiffs' assertion that no new evidence on damages should be allowed. *Cyanamid IV*, 105 F.Supp.2d at 1183-84. Instead, I agreed with Cyanamid and determined that "all issues of damages should be reopened." *Id.* In doing so, I specifically determined that "the parties [be] afforded an opportunity to present additional evidence on the issue of actual damages *and related equitable remedies* to be awarded Plaintiffs ...." *Id.* The gist of Cyanamid's argument now is that this additional evidence may only be considered for the purposes of reducing Plaintiffs' damages on the fraud claim. As to the unjust enrichment claim, Cyanamid argues Plaintiffs should be bound by the "failure of proof" at the first trial.

The reopening of damages and related equitable remedies was subjected to the formalities of a Scheduling Conference (held August 2, 2000) and Scheduling Order (issued August 22, 2000), which set a February 15, 2001, discovery deadline and March 5, 2001 trial date. The parties participated vigorously in the post-remand discovery process, exchanging tens of **[1236]** thousands of pages of documents, much of it Materna sales figures and documents related to

Cyanamid's pursuit and prosecution of the '634 Patent either unaccounted for or withheld by Cyanamid in the proceedings leading up to the first trial in 1996.[5] Both parties designated

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[5] Included in the newly produced documents was the long-lost "Record of Invention" prepared by Dr. Leon Ellenbogen in 1984. The late disclosure prompted cries from Plaintiffs for sanctions and a request for additional/supplemental liability determinations premised on the Record of Invention on remand. *See* Pls.' Mot. for Sanctions, for Order for Additional Findings, Further Proceedings and Plenary Relief based on Cyanamid's Belated Production of the Record of Invention, Fraud, and Litigation Misconduct (filed 11/20/00) and Supplement to Motion (filed 6/7/01). Rather than reopen liability issues and alter or supplement those findings already made in *Cyanamids III* and *IV*, I opted to treat the issue as one for sanctions to be addressed as a separate matter after the damages retrial. In anticipation of Cyanamid's argument on further appeal, I will say, however, that the Record of Invention does nothing to change my mind with respect to Dr. Ellenbogen's credibility on the issue of conception.

The Record of Invention completed by Dr. Ellenbogen provides a conception date of "9-21-79" and refers to "Memo--Dr. R.H. Allen to Dr. E. [sic] Ellenbogen" as corroboration for this date. The reference is apparently to Dr. Allen's September 21, 1979 letter to Dr. Ellenbogen, admitted into evidence in the first trial as Ex. 68, in which Dr. Allen reports the results of the Doctors' *initial* serum study (Study I), which found nothing more than that iron absorption rates for both Materna and Stuartnatal were poor. (Tr. Ex. 68 (absorption "might be as little as one mg, an amount that would not be sufficient to maintain iron stores in pregnant women").) The identification of mineral salts as the culprits in iron absorption and the initial idea of decreasing the calcium and magnesium salts in Materna to increase the absorption of iron did not even arise until the completion of Studies IA and II, *see Cyanamid IV* at 1167 ("[o]ut of Studies IA and II came the initial idea at the heart of this litigation, namely, that the large amounts of calcium carbonate and magnesium oxide in Materna were inhibiting iron absorption and that Materna could be reformulated to reduce or eliminate this effect"), which did not take place until November 1979 and were not reported to Dr. Ellenbogen until December 4, 1979. Letter from Dr. Allen to Dr. Ellenbogen dated 12/4/79 (Tr. Ex. 79.) This initial idea, in turn, was not reduced to a "complete and operative invention, as it is hereafter to be applied in practice" for purposes of federal inventorship standards under *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed.Cir.1994), until February 1980, when Study IIA, which identified the specific levels of calcium carbonate and magnesium oxide at which the inhibitory effect on iron absorption occurred, was completed. *See Cyanamid IV*, at 1167-68, 1176-77 (applying

numerous additional experts who would testify as to the value of Plaintiffs' loss as a result of Cyanamid's secret securing of exclusivity rights to the patented technology as well as to the value, to Cyanamid, of having secured such rights. The process was acrimonious and hard fought. Having secured the right to reopen the evidence to challenge the royalty rate and sales figures **[1237]** evidence presented by Plaintiffs at the first trial, Cyanamid urges application of the law of the case doctrine and mandate rule to prevent Plaintiffs from using this evidence for any other purpose. The Federal Circuit's mandate was not so limited, and, even if it were, I find the substantial new evidence disclosed and presented on remand warrants reconsideration of the question of disgorgement.

II. *ACTUAL DAMAGES--FRAUD.*

My findings and conclusions on the issue of Cyanamid's liability for fraudulent nondisclosure are fully set forth in my Memorandum Opinion in *Cyanamid IV*. Any award of damages on remand, however, is subject to the Federal Circuit's note, at page 1373 of its opinion that my damages determination included two "errors": (1) that the University was "de-

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Burroughs and citing both Dr. Allen's trial testimony and Dr. Allen's March 14, 1980 letter to Dr. Ellenbogen (Tr. Ex. 85) reporting on Study IIA).

Simply put, there was no "conception" or "invention," by *anyone*, of a reformulation idea in September 1979, and certainly none that is evidenced by a letter, written by someone other than the claimed inventor, merely identifying the absorption problem in the first instance. Dr. Ellenbogen's reference to the September 1979 letter in the Record of Invention, had I reopened evidence to consider it on remand, would have served only to corroborate the adverse inference drawn in *Cyanamid III* and reiterated in *Cyanamid IV*, perhaps even intensifying my conviction that Dr. Ellenbogen's claims of inventorship were false. It certainly would not, as Cyanamid suggested repeatedly throughout the disputes regarding the Record's production, have been viewed as "corroborat[ing]" Dr. Ellenbogen's trial testimony that he "conceived of increasing iron absorption by reducing the amounts of calcium carbonate and magnesium oxide ... in ... 1979." *See e.g.*, Br. of Def. Cyanamid in Opposition to Pls.' Nov. 21 Motion for Sanctions and Other Relief (filed 12/19/00) at 1- 2.

prived of financial opportunities and prestige [it] would have enjoyed had [its] doctors been credited with the invention"; and (2) that the doctors were harmed "both personally and professionally" as a result of Cyanamid's fraud. *Cyanamid*, 196 F.3d at 1373 (referring to findings made at 974 F.Supp. at 1353). Given that the Doctors "intended to, and did, freely share their research results to allow Cyanamid to make and sell an improved Materna formulation" and that the "University ha[d] never been in the business of manufacturing or marketing prenatal vitamins," the Federal Circuit determined the only financial opportunity the University could have lost as a result of Cyanamid's fraud was "the payment that Cyanamid would have made to secure the Doctors' cooperation in filing the required documents with the PTO, an assignment of ownership rights and/or an exclusive license from the University." *Id.* at 1374. Much has been made of this language on remand and I pause briefly to make the following point.

The damage award in *Cyanamid III* was "the reasonable royalty Plaintiffs could have expected had they assigned or transferred exclusive rights to the reformulation to Cyanamid," *Cyanamid III*, 974 F.Supp. at 1357, precisely the type of damages I have been instructed to award, if the evidence supports them, on remand. The nature of the damages to be awarded Plaintiffs for Cyanamid's fraud was, and has always been, a reflection of the value, to Cyanamid, of the *patent* it secretly secured and fraudulently failed to disclose to the true inventors, not the value to Cyanamid of making and selling a reformulated product generally. There were no damages awarded in *Cyanamid III* for any loss to the University of an opportunity to make or sell reformulated Materna and no damages awarded for any "loss of prestige." The Federal Circuit's admonition on appeal was just that--a sage monition to evaluate, when reconsidering any reimposition of an award of damages on remand, the state of affairs that existed in 1981. This I will do.

Having said that, I turn to the task at hand. In *Cyanamid III*, I applied a 12% royalty rate to the aggregate

sales figures presented by Plaintiffs to award Plaintiffs $44,396,159 in damages. I used those figures because they were the only evidence on royalty rates and sales figures presented at the original trial. Cyanamid failed to present any.[6] After Cyanamid secured the **[1238]** opportunity to reopen damages evidence on remand, substantial additional evidence on royalty rates and sales figures was presented.

In determining the amount of any payment Cyanamid would have made to secure the Doctors' "cooperation in filing the required documents with the PTO, an assignment of ownership rights and/or an exclusive license from the University" so that it could lawfully patent the Doctors' reformulation technology, *see* 196 F.3d at 1374, the Federal Circuit advised that I "consider the usual and customary arrangements at the time of the filing of the patent application." *Id.* Much evidence on such customary arrangements was presented at trial, mainly through the expert testimony of Messrs. Alpert, McCool and Atkinson. In addition, there was substantial evidence offered by Plaintiffs as to the comparative sophistication of the University, and Dr. Allen in particular, in licensing negotiations as compared to universities and faculty researchers generally in the 1981 time frame.

After hearing all of the evidence, old and new, I find conclusively and beyond any doubt that Cyanamid saw substantial value in securing exclusive rights to the reformulation technology in 1981. By introducing reformulated Materna in the fall of 1981 and then filing a patent application

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[6] The only evidence presented at trial attempting to quantify [the] loss [to Plaintiffs, of the patented idea's value] was Plaintiffs' tables and expert testimony projecting Cyanamid's net sales of reformulated Materna through the life of the Patent and identifying the reasonable royalty Plaintiffs could have expected had they assigned or transferred exclusive rights to the reformulation to Cyanamid. Cyanamid offered no evidence to dispute the sales figures or the royalty calculations, and I accept them as fact.

Cyanamid III at 1357.

shortly thereafter, Cyanamid knew it would have a 1981 trigger date for future enforcement actions against manufacturers who were marketing generic Materna formulations after that date. This is evidenced by documents revealing that Cyanamid was preparing, even before issuance of the patent, to enforce its exclusivity rights against such manufacturers as soon as the patent issued, "unless the[ir] product[s] w[ere] on the market prior to December, 1980." 9/12/83 Internal Cyanamid Mem. (Ex. 225) at p. 1. As Professor Rubinfeld explained in his testimony, Cyanamid was aware of other direct value that would flow from the securing of exclusivity rights, such as the building up of the Materna trademark and the virtual elimination of "leakage" associated with the substitution by pharmacists of generics for prescribed brand-name products. *See* Rubinfeld Test. (Trial Tr. Vols. IV and V) at 595-96, 648-49. Because the substitution rate for unpatented brand-name products is as high as 50%, marketing dollars spent promoting those products yield returns as low as 50 cents on the dollar. A patented product, by contrast, gives the manufacturer a much higher return on every marketing dollar and adds significantly to the value of the patent. *See id.*

Up-Front Payment and Reasonable Royalty Rate.

Having determined that Cyanamid would have entered into negotiations strongly motivated to acquire exclusive rights to the Doctors' reformulation technology, I note the task of actually recreating the hypothetical negotiations proved difficult as an evidentiary matter. The speculative nature of the task was such that the evidence presented consisted largely of "expert" anecdotes or opinions as to what that particular expert, personally, or what a licensing negotiator of that era, generally, "would have done" as a participant in such negotiations in 1981.

Each side professed that its expert and witnesses were capturing the "real world" of what would have happened between the parties in 1981, while the other side was dwelling in a land of irrelevant assumptions and make believe. While I found Plaintiffs ultimately had the upper hand in this re-

gard in the testimony of Mr. Alpert and Dr. Allen, neither side was particularly successful at recreating the hypothetical 20-year old transaction required. The reason for this will be revisited in the section that follows on equitable relief. In **[1239]** short, there was an "otherworldly" element to the endeavor, because the reality of the situation was not only that neither the Doctors nor the University had any intention of entering into such a transaction, but Dr. Ellenbogen was at the same time falsely, and secretly, claiming that he was the inventor of the Doctors' reformulation technology. In order to hypothesize the arms-length transaction required, however, the parties' experts had not only to presume away Dr. Ellenbogen's theft and assume Cyanamid was coming to the table openly to secure exclusivity rights to technology it knew had been invented by the Doctors, but also to presume, in contravention of what I have explicitly found to have been the case, that the University and Doctors were willing to sell them in the first place.

Nevertheless, and in keeping with the Federal Circuit's admonition that the University's financial loss be calculated in terms of the hypothetical amount Cyanamid would have paid had it engaged in arms-length licensing negotiations with the University in 1981, I find the evidence presented established that payment to the University would have been in the form of a modest up-front payment together with a royalty arrangement whereby the University would receive a percentage of Cyanamid's sales of prenatal multivitamin products developed using the Doctors' reformulation technology over the life of any patent issued by the PTO, or until Cyanamid ceased producing or otherwise terminated the arrangement. As to the amount of the up-front payment, I find the evidence supports a finding that such payment would have ranged between $50,000 and $150,000, which includes any premium UPI may have extracted from Cyanamid based on its relative sophistication in the field of university licensing and the fact that, at the time, Cyanamid saw significant value in obtaining exclusivity rights necessary to pursue a patent on the reformulation technology and wanted those rights badly. Given the equivocal nature of the evi-

dence suggesting a range from $50,000 to $150,000, I find $100,000 is the appropriate amount for the up-front payment.

In reaching this conclusion, I reject as overreaching both the testimony of Plaintiffs' expert Shannon McCool that the University could have commanded an up-front payment in excess of $ 2 million and the testimony of Cyanamid's expert Atkinson that such payment would have been $0. I am persuaded, however, that exclusivity rights to the reformulation technology were of unique value to Cyanamid, as Cyanamid already enjoyed market position with the Materna tradename and already intended to implement a reformulation within its scope. To the extent those rights ultimately translated into the award of a formal patent, Cyanamid would be positioned to extract even greater rewards because it could reach back and enforce those rights against generic manufacturers and virtually eliminate competition. This, of course, is exactly what transpired.

As to the reasonable royalty rate Plaintiffs could have commanded in 1981, the evidence presented at retrial did not support the 12% rate originally applied in *Cyanamid III*. Rather, the weight of new evidence demonstrated that the usual and customary arrangements at the time of the filing of the patent application in 1981 involved substantially lower royalty rates (but not the ".5% or less" suggested by Atkinson) and that even the relative sophistication of the University (through UPI) and Dr. Allen at the time of the negotiations would not have resulted in a 12% royalty rate being paid for the reformulation technology. I note Dr. Allen had never personally secured more than a 6% royalty rate for any of his patented inventions at the time, nor had UPI secured a **[1240]** higher rate at the time for the University or any of its other clients.

Nevertheless, considering the long-term relationship and unique value to Cyanamid of the reformulation technology and weighing all of the evidence presented by Plaintiffs' witnesses and experts Alpert, McCool and Rubinfeld against the evidence presented by Cyanamid's witnesses and expert

Atkinson, I find the University would have secured a 6% royalty rate on Cyanamid's total aggregate net sales of the reformulated Materna product and successor products reformulated using the Doctors' technology through the life of the Patent, or until the arrangement was otherwise terminated. I arrive at this number, which is at the high end of what Dr. Allen and UPI had negotiated for other inventions/technologies at the time, based both on the testimony of McCool and Rubinfeld regarding the unique opportunity and value the reformulation technology presented for Cyanamid, and my rejection of Atkinson's testimony of what he would have negotiated in the 1981 time frame based on his experience as a licensing negotiator at Harvard. I discounted Atkinson's testimony because he was deliberately instructed not to consider the reality of the relationship between the University doctors and Cyanamid at the time, chose not to interview any of the actual players at Cyanamid or the University, or even to consider that, given the hypothetical assumption that the University *wanted* to sell the technology, that Cyanamid would have been willing to pay at least something to prevent it from selling it to a competitor.

Royalty Base (Aggregate Net Sales).

Determining the appropriate sales base on which to calculate royalties in this case involves several considerations, including (1) the time frame over which royalties would have accrued; (2) the nature of the sales--i.e., domestic sales only or domestic plus international sales--to be included; and (3) whether Cyanamid's incomplete actual sales figures or IMS sales data should be used. Based on the evidence presented, I find the appropriate start date for any royalty arrangement negotiated in 1981 would have been the date the patent issued, i.e., 1984. I find 1994 to be the appropriate end date for purposes of determining the royalty base, as I was unpersuaded by Plaintiffs' evidence that Cyanamid deliberately "tanked" the product after that. I was also unpersuaded that Cyanamid's foreign-sourced international sales would have been included in any royalty base negotiated in 1981, and find the royalty base would include domestic and

U.S.-sourced international sales only. As for sales figures, I will use Cyanamid sales figures for any years between 1984 and 1994 in which complete sales data was disclosed to Plaintiffs and IMS data for any years in which it was not.

Prior Art.

In awarding damages for fraud, I reject Cyanamid's argument that these damages should be zero because the '634 Patent was ultimately rendered valueless by virtue of "prior art." Besides being sublimely self-serving, the argument is simply not salient. At issue is the value, to Cyanamid, of securing an assignment of exclusive rights to the University Plaintiffs' reformulation technology in 1981. Clearly Cyanamid was not aware at the time it filed its patent application or during the time in which the application was pending of any potentially invalidating prior art or it would have been committing fraud on the PTO in pursuing it. The amount it would have paid to obtain a license/assignment and to secure the Doctors' cooperation in filing the necessary patent application documents would therefore have been the same whether such prior art existed at the time or not.

[1241] I note that for the purposes of this litigation, Cyanamid never pled the invalidity of the '634 Patent as an affirmative defense and emphatically argued, throughout this litigation until shortly before the damages retrial, that the Patent was valid and enforceable. The prior art search and documents to which Cyanamid now points as evidence of the Patent's invalidity have been in the possession of Cyanamid for years, years in which Cyanamid simultaneously insisted to this Court and at least five others that the Patent was valid and rightfully Cyanamid's. Cyanamid realized substantial benefit from enforcing the Patent against competitors during this time period, and is estopped from challenging the validity of the Patent by raising the specter of prior art now.

III. *PUNITIVE DAMAGES.*

Based on the findings of fact and conclusions of law reiterated and supplemented in my liability determination on remand, I ordered the punitive damages award of $500,000

each to Drs. Allen and Seligman "vacated," with a "new amount" to be assessed against Cyanamid in their favor after the damages retrial. *Cyanamid IV*, 105 F.Supp.2d at 1185. After considering the parties' respective arguments in their briefs, I am persuaded that the $500,000 punitive damage amounts should be re-entered on remand. The original award was premised not on the amount of actual damages sustained by the Plaintiffs, but "on Cyanamid's cynical disregard of these doctors as scientists" and its conduct, "[w]hen [it] recognized the profit that could be made," in "pillag [ing] the doctors' invention as so much booty." *Cyanamid III*, 974 F.Supp. at 1358. There is no basis to increase the punitive damage award to the Doctors for this misconduct because there was no additional evidence taken at the damages retrial with respect to it.[7]

Accordingly, Cyanamid will again be ordered to pay the Doctors $500,000 in punitive damages each, an amount which is intended to punish Cyanamid for its conduct in exploiting these doctors--both personally and as scientists--for its own gain.

IV. *EQUITABLE RELIEF--UNJUST ENRICHMENT.*

The question of whether both legal and equitable remedies can be awarded in this litigation and, if so, the extent to which they overlap has been raised in *Cyanamid III* and *IV*, with no supervening directions from the Federal Circuit on appeal. The question remains open, and I address it below.

Overview.

I agree with Cyanamid that there can be no disgorgement of profits as a measure of actual damages in this case. Once it is assumed in a hypothetical that the University

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[7] Plaintiffs' request for attorney fees and costs and concerns regarding Cyanamid's late production of the Record of Invention, suppression of documents in the first trial, "obdurate" behavior in discovery, and litigation misconduct, generally, will be addressed in the context of Plaintiffs' Motion for Sanctions, filed November 21, 2000 and supplemented on June 7, 2001, and will not be considered as evidence justifying an increased exemplary damages award.

would have sold Cyanamid exclusivity rights in the Doctors' invention, any profits generated as a result of those rights would belong to Cyanamid and could not be considered a "loss" to Plaintiffs. I also agree with Cyanamid that there can be no disgorgement of profits to remedy that aspect of its unjust enrichment liability that simply says it would be inequitable for Cyanamid to retain the consideration it should have paid the University in the hypothetical 1981 transaction. This "remedy" **[1242]** would arise any time an award of damages is ordered, and is obviated by the payment of those damages.

The issue, however, does not end there. The gravamen of this case is that the Doctors never viewed the reformulation idea as a financial opportunity and neither they, nor the University by virtue of the University Patent Policy, ever intended to or would have sold exclusivity rights to the idea to Cyanamid in 1981. The evidence and my findings in this regard in *Cyanamids III* and *IV* were uncontroverted and unequivocal: Drs. Allen and Seligman wanted to present their studies and research-based reformulation concepts to the marketplace of ideas by publishing them in the most prestigious medical journal that would accept them. In doing so, they fully intended that Cyanamid would use their work to manufacture, and profit from the sale of, an improved Materna product. *But they also intended* that other manufacturers of prenatal multivitamin products in the marketplace would do the same. *Cyanamid III*, 974 F.Supp. at 1354 (finding Cyanamid removed reformulation technology from free marketplace of ideas "in direct contravention of those who invented it"); *Cyanamid IV*, 105 F.Supp.2d at 1184 (reiterating that Cyanamid "thwarted what the Doctors intended 'freely' to convey, [namely] a complete and definite research-based idea for reformulating prenatal supplements that would inure to the benefit of all ... not just Cyanamid").

In what I specifically found to be a "cynical disregard of these doctors as scientists," *Cyanamid III*, 974 F.Supp. at 1358, Cyanamid consciously thwarted this intent by falsely

claiming it was Dr. Ellenbogen who invented the reformulation technology and then acting secretly to secure, by patent, the right to exclude others from using it. Cyanamid's actions were motivated by greed and a desire for the greater profits anticipated by the securing of exclusive, rather than general, rights to the technology, in direct contravention of what the Doctors wanted and intended. The harm to Plaintiffs of this conduct--i.e., the betrayal and the loss of the Doctors' prerogative as scientists, and the University's prerogative as a research institution intent on supporting, rather than exploiting, its faculty, to determine whether their research and reformulation concepts entered the marketplace of ideas generally or are sold to become the exclusive and profit-generating intellectual "property" of another--is not quantifiable in terms of specific monetary loss, as it had to be presumed away to determine Plaintiffs' damages under the hypothetical described above. Accordingly, there is an entire aspect of the harm visited by Cyanamid's misconduct not remediable by an award of damages.

What remedy, then, for an inventor deprived of his prerogative *not* to patent,[8] or to refuse to allow another to patent, his invention? What consequence for an entity who took for itself the rewards of patent when it was not the true inventor? It is here that principles of equity find their place, and here that a benefits-based analysis becomes appropriate.

Preliminary Findings and Conclusions--Disgorgement.

In *Cyanamid IV*, I applied federal patent standards of inventorship in accordance with the Federal Circuit's mandate and again found Cyanamid was unjustly enriched by the taking of exclusivity rights that were rightfully Plain-

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[8] As stated in *Cyanamid IV*, the patenting of an idea is an exception to the rule that "ideas in the public domain inure to the good of society." 105 F.Supp.2d at 1175. Clearly there is no *requirement*, then, that all patentable ideas actually be patented.

tiffs'. At issue now is the nature and scope of an appropriate remedy for Cyanamid's misconduct. I have already rejected Cyanamid's argument **[1243]** that Plaintiffs' failure to appeal my finding that there was insufficient evidence in *Cyanamid III* to justify an order requiring Cyanamid to disgorge the benefits it received precludes them from seeking such a remedy on remand. Damages evidence was reopened on remand--largely at Cyanamid's request--and additional discovery was allowed. Thousands of pages of profits and sales documents were produced by Cyanamid for the first time on remand. This new evidence, together with the testimony of numerous additional fact and expert witnesses presented for the first time by both sides at the retrial, was sufficient to allow for the quantification of value/profits realized by Cyanamid attributable to the wrongfully obtained and enforced '634 Patent.

Colorado Law Allows for the Award of Both Legal and Equitable Remedies under the Circumstances Presented.

As set forth above, the Federal Circuit recognizes that Colorado law governs the claim for unjust enrichment in this case, as long as federal patent standards of inventorship are applied in determining liability. 196 F.3d at 1374 (citing *Cablevision*, 649 P.2d 1093). Contrary to Cyanamid's contention on remand, there is clear support in Colorado law for a benefits- based approach to effecting equitable relief in appropriate cases. *See EarthInfo, Inc. v. Hydrosphere Resource Consultants, Inc.*, 900 P.2d 113, 118 (Colo.1995)(en banc) (adopting case-by-case approach to determining whether profits may be awarded as restitution in unjust enrichment action).[9] This is true even if it results in plaintiff

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[9] That *EarthInfo* arose as an action for rescission of a contract, rather than fraud, is immaterial in my view because the contractual nature of the parties' relationship did not inform the Colorado Supreme Court's analysis. The claim in that case sounded in equity, and the nature of the remedy sought, i.e., a return to the *status quo ante* when a return of plaintiff's monetary losses were inadequate to do so, was also equitable.

receiving a greater reward than if simply awarded damages for the defendant's misconduct:

> Restitution, which seeks to prevent unjust enrichment of the defendant, differs in principle from damages, which measure the remedy by the plaintiff's loss and seek to provide compensation for that loss. As a consequence, 'in some cases the defendant gains more than the plaintiff loses, so that the two remedies may differ in practice as well as in principle.'

EarthInfo, 900 P.2d at 118 (quoting Dobbs, *Law of Remedies* § 4.1(1) at 555, 557).

No easy formulas exist for determining when restitution of profits realized by a party is permissible. *EarthInfo* at 119. Because it is an equitable remedy, it is within the trial court's "sound discretion" to fashion. *See id.* As the Colorado Supreme Court in *EarthInfo* envisioned it, in determining whether restitution of profits/disgorgement is appropriate in a given case,

> **[1244]** courts must resort to general considerations of fairness, taking into account the nature of the defendant's wrong, the relative extent of his or her contribution, and the feasibility of separating this from the contribution traceable to the plaintiff's in-

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900 P.2d at 118-19. At issue were the means available to a trial court judge to effect that remedy and, according to the Court, one of those is to require the defendant to give up his profits. *Id.* at 119. The nature of the defendant's wrong was irrelevant, as evidenced by the Court's citation to *Duke v. Pickett*, 168 Colo. 215, 451 P.2d 288 (1969) (rescinding sales transaction consummated through fraud) and its use of an example involving theft to explain why "restitution measures the remedy by the defendant's gain." *Id.* at 118, n. 8(" 'Suppose a thief takes the plaintiff's $10 watch and sells it for $20. The thief is liable for $20 as restitution ....' ")(quoting 1 Dan B. Dobbs, *Law of Remedies* § 4.1(1) at 554 (2d ed.1993)). Supposing a pharmaceutical company takes a researcher's $10 idea and, by fraudulently securing exclusivity rights to it, earns profits of $20, *EarthInfo* would support a conclusion that the wrongdoer is liable for $20 as restitution, even though plaintiff only lost $10.

> terest [citing 1 George E. Palmer, *The Law of Restitution* § 2. 12 at 161 (1978)]. Thus, the more culpable the defendant's behavior, and the more direct the connection between the profits and the wrongdoing, the more likely that the plaintiff can recover all defendant's profits [citing Douglas Laycock, *The Scope and Significance of Restitution*, 67 Tex. L.Rev. 1277, 1289 (1989)]. The trial court must ultimately decide whether the conclusion that the defendant's retention of any profit is unjust.

EarthInfo, 900 P.2d at 119.

Based on my findings of liability and the extreme culpability of Dr. Ellenbogen and Cyanamid in 1981, and continuing throughout the pendency of the patent application and thereafter, together with the wealth of new evidence establishing that Cyanamid realized substantial value in the form of exclusivity-based profits as a result of its misconduct, I find and conclude that Cyanamid's retention of those profits would be unjust and that Cyanamid should be ordered to disgorge them. My analysis in this regard was informed by my knowledge and review of Colorado law and the persuasive testimony of Plaintiffs' expert, Professor Daniel Rubinfeld, at the damages retrial. The remedy is separate and independent from Plaintiffs' remedy at law, in that it is premised on the benefits realized by Cyanamid as a result of its misconduct, rather than the University's demonstrated financial loss. The remedy is subject, of course, to the principle against double recovery, which will be addressed separately below.

Having determined that disgorgement of profits is appropriate under the guidelines established under Colorado law, I must determine the amount of the profits to be returned in this case given the facts established. The Colorado Supreme Court in *EarthInfo* acknowledged that " 'some apportionment' " of net profits should be made to reflect the relative contributions to those profits by the parties. 900 P.2d at 120 (quoting Dobbs, § 4.5(3) at 642-43) ("[S]ome apportionment must be made between those profits attributable to the plaintiff's property and those earned by the defendant's efforts and investment, limiting the plaintiff to the profits fairly attributable to his share.").[10]

[1245] Professor Rubinfeld ably addressed this issue, performing an analysis that calculated only those true profits, i.e., sales less production and marketing/distribution costs, of Cyanamid that were attributable to the right to exclude generic competition. Rubinfeld Test. (Trial Tr., Vol. V) at pp. 652-668; Rubinfeld Report, (Ex. 843) at pp. 5-8. Specifically, Rubinfeld calculated Cyanamid's patent-related

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[10] Cyanamid cites *EarthInfo* for the proposition that plaintiffs bear the burden of establishing facts sufficient to permit the trial court to determine the relative contributions of the parties so that profits may be fairly apportioned. (Reply Br. of Def. Cyanamid in Support of Mot. re Appropriate Scope of Damages Trial on Remand at p. 6 (citing *EarthInfo* at 121)). The Court in *EarthInfo* makes clear, however, that where apportionment depends on information to which "defendant usually has the best access ... [defendant] may properly be required to prove such [information]" to aid the trier of fact in the apportionment of profits. *EarthInfo* at 120. In sum, "[n]o single rule governing the burden of proving apportionment is adequate for all cases or all facts of a single case." *EarthInfo*, 900 P.2d at 120. "The court must seek to determine a fair apportionment that will result in a reasonable approximation or informed estimate of the relative contributions of the two parties." *Id.* at 121 (citing Palmer, § 2.13 at 171-73; Dobbs § 4.5(3) at 643). "The allocation of the burden of establishing such approximation, and degree of specificity of proof required, may be affected by such factors as the seriousness of the defendant's wrongdoing and the extent to which the plaintiff's contribution was at risk in the profit making enterprise." *Id.* The dispute is largely academic in this case, however, as the evidence presented by Plaintiffs by and through Professor Rubinfeld was adequate for the determination required.

profit in terms of Materna sales, from 1984 to 1994, less Cyanamid's production and marketing/distribution costs, and compared them with the sales of co-industry leader Stuartnatal's unpatented product, Stuartnatal 1+ 1, less production and marketing/distribution costs, over the same period of time. Using a patent period from 1984-94, Dr. Rubinfeld concluded the value of the '634 Patent in excluding generic competition and suppressing substitution was $27.2 (using IMS data) or $23.2 million (using internal Cyanamid data). I found Professor Rubinfeld's analysis competent and his presentation persuasive. His final number is conservative, moreover, in that it does not attempt to quantify additional profit attributable to the trademark, promotional or door-opening values of the Patent, each of which I found to have been amply demonstrated by the evidence.

I find Cyanamid was unjustly enriched by its conduct in taking for itself exclusivity rights in the Doctors' reformulation technology and then secretly patenting that technology without the Doctors' or University's knowledge or consent. This taking not only deprived the University of the financial gain it could have realized had Cyanamid paid for an exclusive license or assignment of rights and filed its patent application above board, but also betrayed the Doctors and deprived both them and the University of their prerogative *not* to patent the Doctors' invention or to exclude others from benefitting from it. The profits Cyanamid earned by virtue of its possession and enforcement of the wrongfully secured Patent are the direct result of that misconduct. Those profits constitute ill-gotten and undeserved gains for which Cyanamid did not pay and would not have received, because the rights that generated them would never have been sold. In an exercise of my authority under Colorado law to effect equity in the face of the exceedingly culpable conduct at issue in this case, I order those gains disgorged.

Overlap between Equitable and Legal Remedies in this Case.

I have already identified the dilemma that arises when a defendant is found liable to a plaintiff under both legal and

equitable theories of relief. *See Cyanamid III*, 974 F.Supp. at 1359, *Cyanamid IV*, 105 F.Supp.2d at 1184-85. The issue is complicated in this case when one begins with the determination of the price Cyanamid "would have" paid for exclusivity rights in 1981 assuming Plaintiffs would have sold them. Once one accepts the premises necessary to the hypothetical, the logical extension of them is that the legal and equitable remedies "coincide." *See id.* Having paid for those exclusivity rights in an arms-length transaction, any profits generated by those legitimately procured rights would be Cyanamid's to keep and not a "loss" to Plaintiffs at all.

I have already determined, however, that the hypothetical necessary to the damages calculation fails to include two fundamental elements of the injury visited upon Plaintiffs: (1) Dr. Ellenbogen's theft of the Doctors' invention and duplicity in keeping that theft from the Doctors while they continued to perform work for Cyanamid; and (2) the deliberate thwarting of the Doctors' intent that their research technology be "owned" by no one. The damages calculation driven by the hypothetical, then, does not compensate Plaintiffs for the full scope of their injuries and the equitable and legal remedies imposed **[1246]** do not coincide. That does not mean, however, that they do not overlap.

Fundamental to any remedial scheme is the proposition that a plaintiff generally may not recover twice for the same injury. *E.g. MidAmerica Fed. Sav. & Loan Ass'n v. Shearson/American Express, Inc.*, 962 F.2d 1470, 1473 (10th Cir.1992). In the instant case, I find the principle against double recovery would preclude an award to Plaintiffs both of the hypothetical price Cyanamid would have paid for exclusivity rights in 1981 *and* the gain Cyanamid realized as a result of its fraudulent and inequitable conduct because, under normal circumstances, the price paid for exclusivity rights should serve to compensate an inventor for the purchaser's future profits. Here, however, the hypothetical purchase price does not serve fully to compensate Plaintiffs both because an entire aspect of the harm visited by Cyanamid is not included in that calculation and, as it turns out, the

evidence clearly establishes that Cyanamid's gain as a result of its misconduct is greater than the losses established by resort to a less-than-comprehensive hypothetical. Under these circumstances, Colorado law recognizes my prerogative, in equity, to compel Cyanamid to disgorge that gain.

Plaintiffs' remedy on their fraud and unjust enrichment claims, then, can be quantified in terms of the price the University could have commanded in the hypothetical 1981 transaction for exclusivity rights *plus* the difference between Cyanamid's ensuing profits less that purchase price, or, simply, Cyanamid's patent-related profits. Either calculation compensates Plaintiffs for the full panoply of their injuries and takes into consideration the principle against double recovery.

V. *CONSTRUCTIVE TRUST.*

Plaintiffs on remand present the interesting argument that their success on the revived patent correction and equitable title claims should entitle them to additional equitable remedies in the form of a constructive trust. While I question the applicability and utility of the duties-of-a-fiduciary analogy, I view it as an alternative to the disgorgement theory already adopted in equity. Specifically, I agree that Plaintiffs' status as the equitable title holders to the '634 Patent from 1984 forward constitutes a separate and independent ground for requiring Cyanamid to disgorge to them the profits it unjustly gained as the putative holder of the Patent. I deny, however, Plaintiffs' request for the imposition of a constructive trust on Cyanamid's patent-related profits based on any analogy that Cyanamid stood as a fiduciary to Plaintiffs during the course of its possession of the Patent.

VI. *PREJUDGMENT INTEREST.*

Colorado's prejudgment interest statute provides in relevant part:

> When money or property has been wrongfully withheld, interest shall be an amount which fully recognizes the gain or benefit realized by the per-

> son withholding such money or property from the date of wrongful withholding to the date of payment or to the date judgment is entered, whichever occurs first.

Colo.Rev.Stat. § 5-12-102 (2000). Prejudgment interest in this case shall be calculated at a rate of eight percent per annum, compounded annually.

VII. *CONCLUSION.*

On or before August 23, 2001, Plaintiffs shall prepare a set of proposed findings of fact and conclusions of law consistent with the preliminary rulings set forth herein. The proposed findings should be declarative and supported by specific and complete citations to the record. The proposed conclusions of law should be objectively [1247] analytical and in keeping with my preliminary rulings. This is not an assignment in advocacy and extensive briefing and argument on the proposed findings and conclusions will not be entertained. Within 20 days after the date of filing of the proposed findings of fact and conclusions of law, Defendant may file specific objections with complete citations to the record. A hearing on Plaintiffs' Motion for Sanctions and Supplement will be set within 30 days after the Findings of Fact and Conclusions of Law are formally issued.

APPENDIX D

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

THE UNIVERSITY OF COLORADO FOUNDATION, INC.; THE UNIVERSITY OF COLORADO, AN INSTITUTION OF THE STATE OF COLORADO; THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, A BODY CORPORATE OF THE STATE OF COLORADO; ROBERT H. ALLEN, AN INDIVIDUAL; AND PAUL A. SELIGMAN, AN INDIVIDUAL, PLAINTIFFS,

V.

AMERICAN CYANAMID COMPANY, A MAINE CORPORATION, DEFENDANT.

No. CIV. A. 93-K-1657

July 7, 2000

[105 F. Supp. 2d 1164]

MEMORANDUM OPINION ON REMAND

KANE, Senior District Judge.

This patent/copyright and common law fraud action is before me on remand from the Federal Circuit Court of Appeals, and specifically on Plaintiffs' Motion for Entry of Judgment as a Matter of Law. The remand is the result of various appeals and cross appeals of my rulings in two 1995 decisions on motions for summary judgment,[1] and my Find-

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[1] *University of Colo. Found., Inc. v. American Cyanamid*, 880 F. Supp. 1387 (D. Colo. 1995) (rejecting, as a matter of law, Plaintiffs' common law claim of conversion as well as Plaintiffs' claim for correction of patent under 35 U.S.C. § 256, but finding Plaintiffs had standing to pursue claims for equitable title/relief

ings of Fact and Conclusions **[1166]** of Law issued in 1997 after a three-week bench trial on Plaintiffs' claims for fraud and unjust enrichment. *University of Colo. Found. v. American Cyanamid Co.*, 974 F.Supp. 1339, 44 U.S.P.Q.2d 1231 (D.Colo.1997)(*Cyanamid III*). In *Cyanamid III*, I found in favor of Plaintiffs and against Cyanamid on both claims, awarding nearly $45 million in compensatory damages to the University and assessing $1 million in punitive damages against Cyanamid--$500,000 each, to individual Plaintiffs Allen and Seligman (the Doctors). 974 F.Supp. at 1359-60. Upon entry of final judgment, both sides appealed various aspects of the orders and judgments entered against them.

In a decision issued November 19, 1999, the Federal Circuit Court of Appeals affirmed in part and reversed in part, vacating certain of my findings and legal conclusions and remanding the case for further proceedings. *University of Colo. Found., Inc. v. American Cyanamid Co.*, 196 F.3d 1366 (Fed.Cir.1999). Arguing the record developed during the pretrial and trial proceedings in this case is adequate under the legal standards articulated by the Court of Appeals to permit disposition of the remanded issues without further supplemental proceedings, Plaintiffs moved for entry of judgment as a matter of law. Cyanamid objected, and, after briefing, I heard oral argument on the Motion. I now issue my ruling, and order that (1) judgment on Plaintiffs' claims for fraud and unjust enrichment re-enter in favor of Plaintiffs and against Defendant under the standards articulated by the Federal Circuit Court of Appeals on remand; (2) Drs. Allen and Seligman be declared equitable titleholders of the '634 patent at issue; (3) Drs. Allen and Seligman be substituted for Dr. Ellenbogen as the true and

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under Patent Act)(*Cyanamid I*) and *University of Colo. Found., Inc. v. American Cyanamid*, 902 F.Supp. 221 (D.Colo.1995)(on reconsideration of *Cyanamid I*, agreeing with Cyanamid that Plaintiffs' equitable title claim must fall with claim for relief under § 256 of Patent Act)(*Cyanamid II*).

correct inventors of the subject of the '634 patent under 35 U.S.C. § 256; and (4) the question of the amount of damages or other equitable monetary relief to be awarded Plaintiffs on their fraud and unjust enrichment claims be retried in accordance with the guidelines for awarding damages articulated by the Court of Appeals in its ruling.

I. *BACKGROUND*

A. *Facts*

The facts giving rise to Plaintiffs' Complaint have been repeated in each of the four written decisions issued in this litigation to date, and are set forth fully in *Cyanamid III*. *See Cyanamid III*, 974 F.Supp. at 1343-52. I revisit these facts briefly, supplementing and clarifying them where appropriate based upon an exhaustive review of the trial transcript and exhibits which are now three years old, as a preface to my discussion of the issues on remand.

Because iron deficiency is a serious concern for pregnant and lactating women, prenatal supplements containing 60 to 65 mg of iron, taken once daily, are widely used to assure that pregnant women absorb the approximately 3.5 mg of supplemental iron per day they require. Materna, the prenatal multivitamin/mineral supplement brand produced and sold by Cyanamid's Lederle Laboratories, contains 60 mg of iron.

In 1979, the manufacturer of a competing prenatal supplement, Stuartnatal, began advertising that its product provided superior iron absorption to that of Materna. To refute these claims and protect its market share, Cyanamid authorized its chief chemist, Dr. Leon Ellenbogen, to commission a study to compare iron absorption in women taking Stuartnatal or Materna. Dr. Ellenbogen asked his friend and long-time professional colleague, University of Colorado researcher and hematologist Dr. Robert Allen, to perform the study. Dr. Allen agreed and, together with his colleague Dr. Paul Seligman, conducted the comparison study in the summer of 1979.

[1167] In a finding that pleased Cyanamid, the study confirmed the amount of iron absorbed by pregnant women

taking Materna was no less, and, in fact, was slightly better, than by those taking Stuartnatal.[2] Of concern to the Doctors, however, was the finding that neither product provided iron absorption in an amount approaching the 3.5 mg recommended for pregnant women.

The Doctors conducted a follow-up study (Study IA) to determine the absorption rate of iron ingested alone, without the various minerals and vitamins included in prenatal supplements. At the end of Study IA, the Doctors compared the high rates of absorption when iron was ingested alone with the suppressed absorption rates discovered in Study I and found there was a "serious problem with both Materna and Stuartnatal." (Testimony of Dr. Allen, Tr. at 431:16- 18.)

Suspecting the calcium and magnesium salts included in relatively large amounts in both supplements adversely affected absorption rates, they immediately designed another follow-up study (Study II) of the effects on iron absorption of calcium sulfate, calcium carbonate, magnesium oxide and combinations thereof, in the amounts present in Stuartnatal and original Materna.[3] Both Studies IA and II were instigated by the Doctors without protocols or specific payment from Cyanamid. *Cyanamid III* at 1346; *see also* Tr. at 433-35 (testimony of Dr. Allen). Test subjects were paid from the University of Colorado hematology division's general account. (Tr. at 433:6-435:18).

Out of Studies IA and II came the initial idea at the heart of this litigation, namely, that the large amounts of calcium carbonate and magnesium oxide in Materna were inhib-

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[2] Study I determined that pregnant women taking Stuartnatal absorbed 2.0 mg of supplemental iron per day, while women taking Materna absorbed 2.8 mg of supplemental iron per day. *See* Table I of the Doctors' 1981 New England Journal of Medicine manuscript (Tr. Ex. 149).

[3] Original Materna contained 350 mg of calcium in the form of calcium carbonate and 100 mg of magnesium in the form of magnesium oxide. Stuartnatal contained 200 mg of calcium in the form of calcium sulfate, and 100 mg of magnesium oxide.

iting iron absorption and that Materna could be reformulated to reduce or eliminate this effect. As Dr. Allen reported to Dr. Ellenbogen in his December 4, 1979 letter:

> I am enclosing a summary as well as specific details of the recent evaluation that we performed of the effects of various calcium and/or magnesium salts on iron absorption. I believe that the results strongly indicate that magnesium oxide, magnesium sulfate, and calcium carbonate all decrease iron absorption in humans, and that such inhibition is not caused by calcium sulfate. The inhibition observed with the combination of calcium carbonate and magnesium oxide appears to explain most of the decreased iron absorption that we have observed previously with Materna ....
>
> Based on the studies that we have performed to date, I believe that iron absorption from prenatal capsules could be increased markedly if calcium sulfate was used in place of calcium carbonate, if the amount of magnesium oxide was reduced or omitted entirely, and if particular care was paid to the rate at which iron from such a capsule was available to go into solution. If such a prenatal capsule is perfected, I believe that this would be of definite benefit to pregnant women and would also benefit the company involved since its share of the prenatal market should increase dramatically. I hope that Lederle will want to pursue the preparation of an improved prenatal capsule and I hope that we can continue to work together in this regard in the future ....

(Ex. 79).

Having gathered momentum for their reformulation idea and not wanting to wait for the wheels at Cyanamid to turn, the Doctors immediately began preparations for a third study (Study IIA) to determine **[1168]** the specific levels of calcium carbonate and magnesium oxide at which the inhibitory effect occurs. They designed their own protocol,

and again paid subjects out of the University hematology department's general fund. Study IIA, conducted in February 1980, revealed there was a "threshold effect with calcium carbonate." (Tr. at 432 (testimony of Dr. Allen).) As Dr. Allen explained at trial, "It wasn't [that] you got inhibition increasing at every level, but at 200 milligrams, somewhat more than that, you did not get inhibition, and that led to the second reformulation, the one I described in the March 1980 letter." *Id.* In that letter, the content of which I also reiterate because of its significance to the factual issues to be determined on remand, Dr. Allen referenced the enclosed results of Study IIA and stated:

> The data indicate that there is no significant inhibition of iron absorption by either 350 mg of calcium in the form of calcium sulfate or 200 mg of calcium in the form of calcium carbonate. As we have discussed previously, I believe that the next step would be for Lederle to reformulate their Materna preparation such that it contains 200 mg of calcium in the form of calcium carbonate and 25 mg of magnesium in the form of magnesium sulfate or magnesium oxide. Once this is done, we will test this preparation versus iron alone and I would expect that the absorption of iron from the new Materna should be similar to that of iron alone.

(Ex. 85.)

Upon receiving Dr. Allen's letter, Dr. Ellenbogen drafted a "protocol" for the already completed Study IIA, which he sent to Dr. Allen, and asked Dr. Allen to perform a new major study in which iron absorption from Stuartnatal would be compared with various reformulations of Materna suggested by the Doctors' work in Studies IA, II and IIA. Cyanamid prepared the protocol, and in October 1980, Study III was conducted using two reformulations of Materna. Reformulation A kept the 350 mg of calcium carbonate present in original Materna, but reduced the magnesium oxide from 100 mg to 25 mg. Reformulation B, the formulation ultimately manufactured and marketed as reformulated Ma-

terna, reduced the calcium carbonate to 250 mg and also used 25 mg of magnesium oxide. The results of Study III, as predicted by the Doctors based on the results of Study IIA, showed the reduction in magnesium oxide in Reformulation A improved iron absorption slightly (from 2.8 mg to 3.0 mg), while the reduction in calcium carbonate in Reformulation B (from 350 mg to 250 mg, an amount approaching, but not quite at, the 200+ mg threshold level at which no inhibitory effect could be expected) improved absorption to 5.0 mg, less than that for iron alone but well above the 3.5 mg recommended for pregnant women.

In *Cyanamid III* I found, and reiterate in the strongest terms here, that the critical studies IA, II and IIA, were conceived of, designed and conducted by the Doctors independently of Dr. Ellenbogen and Cyanamid. While there is no dispute that the Doctors communicated with Dr. Ellenbogen throughout this process, and designed their studies, in part, around Cyanamid's marketing interests *vis a vis* Stuartnatal, the idea for reformulating Materna, and the research, concepts and ideas necessary to its formation and testing, were *entirely* the Doctors'.

Once Reformulation B was discovered and its improvement in iron absorption quantified, Cyanamid asked the Doctors to perform a fourth study comparing the absorption of iron alone with the absorption of iron from Stuartnatal, Reformulation B of Materna, and two other competing prenatal multivitamin- mineral supplements (Natalins and Natafort). Study IV, performed in March 1981, confirmed that reformulated Materna provided the highest iron absorption (this time 4.1 mg, for an average over Studies III and IV of 4.5 mg) of the four products tested.

The Doctors wrote up the results of their studies in an article entitled, "Inadequate Iron Absorption from Many Prenatal **[1169]** Multivitamin-Mineral Supplements" (the Article). (Tr. Ex. 149.) The focal point of scientific interest in the Article was Table I, which presented the results of the Studies I, II, III and IV in a distinctive format with four main columns, nine subcolumns and 12 rows. The informa-

tion in Table I was also presented in graph form in four figures. The Doctors submitted the Article in manuscript to the New England Journal of Medicine for consideration in July 1981, and, as a courtesy long extended to Dr. Ellenbogen over the course of their personal and professional relationship both before and thereafter, sent a copy to Dr. Ellenbogen. In the Article the Doctors claimed credit for the design and conduct of the studies, and the discovery and testing of a range of reformulations to increase iron absorption from prenatal multivitamin/mineral supplements. Dr. Ellenbogen voiced no complaint or objection to this, nor to the fact that he was never mentioned or credited in the Article with any of the studies' designs or results. Nevertheless, and within days of receiving the Article, Dr. Ellenbogen had filled out a Cyanamid company form called a "Record of Inventorship" claiming inventorship of Reformulation B, and Cyanamid began the first steps toward patenting it.

Cyanamid began selling a reformulation of Materna based on the 250 mg calcium carbonate/25 mg magnesium oxide Reformulation B in early fall of 1981. Shortly before announcing the reformulation, and without informing the Doctors or the University, Cyanamid copied significant portions of the Article, specifically including Table I and its supporting Figures 1-4 in their entirety, into a patent application.[4] As part of the application, Dr. Ellenbogen completed an affidavit of inventorship, swearing he was the true and sole inventor of the patented technology. He also completed an in-house Cyanamid form called a "Record of Invention." This form contained a line for insertion of the "date of conception of the invention." Notwithstanding a document retention policy requiring such forms to be maintained in two separate places for the "life of the company,"

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[4] Because the striking similarities between the patent application and the Article--at the heart of this case again on remand--are shown best by the documents themselves, I have, for ease of reference and comparison, attached the charts and tables of each to the text of this opinion as Appendices 1 and 2, respectively.

the form completed by Dr. Ellenbogen is missing from both places and was never located or produced at trial. When asked at trial what date he filled in as the conception date of his invention, Dr. Ellenbogen stated that he does not remember. *See Cyanamid III* at 1349.

Cyanamid's patent application, finally filed in December 1981, claimed exclusive rights to the reformulation and named Dr. Ellenbogen as its sole inventor. United States Patent No. 4,431,634 (the " '634 Patent") issued from this application in 1984. From 1984 until the time of trial, Cyanamid had enforced its patent rights six times to exclude generic competitors from using the reformulations contemplated by the results and data in Table I and Figures 1-4 of the Article.

Notwithstanding the Doctors' personal and professional relationship with Dr. Ellenbogen, and in part, I found, to secure the Doctors' continued cooperation and work, neither Dr. Ellenbogen nor Cyanamid mentioned anything about the patent application, the filing of an affidavit in support of it crediting Dr. Ellenbogen with instigating and supervising all of the studies, the issuance of the Patent itself, the award given Dr. Ellenbogen for being named the inventor on a successful patent, or the six civil enforcement actions brought by Cyanamid to prevent generic drug companies from using the patented technology, from the time the Doctors sent the New England Journal of Medicine manuscript to Dr. Ellenbogen in July 1981 until Dr. Ellenbogen inadvertently let the information slip in a 1993 conversation with Dr. Seligman over dinner. *Cyanamid III* at 1350.

[1170] In the interim the Doctors continued to work for Cyanamid and send Dr. Ellenbogen drafts of papers and other works in progress (including a revision of the New England Journal of Medicine manuscript entitled "Measurements of Iron Absorption from Prenatal Multivitamin-Mineral Supplements," later published by the Journal of Obstetrics and Gynecology in 1983, and, upon receipt, a copy of the Journal's confidential letter of acceptance). When the Doctors finally obtained a copy of the Patent and saw the

copied data table and the content based almost entirely on their Article, they and the University filed suit.

B. *The Proceedings to Date*

The Doctors' lawsuit alleged that (1) Doctors Allen and Seligman, not Dr. Ellenbogen, invented the reformulation of Materna covered by the '634 patent claims and communicated the invention to Dr. Ellenbogen; (2) Dr. Ellenbogen intentionally omitted the Doctors as co-inventors in the patent application; and (3) Dr. Ellenbogen and Cyanamid intentionally hid the Patent from the Doctors during the course of their continued relationship. The University and the Doctors sought restitution and disgorgement of Cyanamid's profits, equitable title to the '634 Patent, and substitution of the Doctors for Dr. Ellenbogen as inventors on the Patent under 35 U.S.C. § 256 (1994).

Cyanamid responded that Dr. Ellenbogen hired the Doctors to perform the research that convinced Cyanamid to reformulate Materna and asserted that Dr. Ellenbogen was the true inventor of the reformulation. It maintained the Doctors transmitted the results of their unfunded research to Cyanamid in 1979 and 1980 with the intention that Cyanamid would reformulate Materna and profit thereby. As such, Cyanamid claimed it was under no obligation to notify the Doctors of the patent application or the Patent itself, and denied any liability to the University. As affirmative defenses, it asserted that the doctrines of preemption by federal patent law, laches, and limitations under relevant statutes barred the University's claims.

The parties filed cross-motions for summary judgment. In *Cyanamid I*, I found Plaintiffs' § 256 claim for correction of the '634 Patent barred as a matter of law, agreeing with the district court's interpretation in *General Elec. Co. v. Brandon*, 25 U.S.P.Q.2d 1885, 1887 (N.D.N.Y.1992) that § 256 was intended to permit correction of inventorship only where the error is "inadvertent and 'without deceptive intent,' " and that a patent procured by fraud as alleged by Plaintiffs would be void and not subject to correction. *Cyanamid I*, 880 F.Supp. 1387, 1398. Because Plaintiffs could

not have legal title to the Patent under the Act, I also concluded Plaintiffs lacked standing to seek damages for infringement. *Id.* at 1397 (citing *Arachnid Inc. v. Merit Indus., Inc.*, 939 F.2d 1574, 1578-79 (Fed.Cir.1991)).

In addition, I granted Cyanamid's motion for summary judgment on Plaintiff's common law claims for conversion, breach of confidentiality obligation and unfair competition. I declined, however, to enter summary judgment against Plaintiffs on their unjust enrichment, equitable title or copyright claims, and found fact issues precluded summary judgment on Cyanamid's limitations defense. *Id.* at 1406. Finally, I found, as a matter of law, that the four bar graphs and data table in the Doctors' 1981 New England Journal of Medicine manuscript were copyrightable and had been wrongfully copied by Cyanamid into the patent application. *Id.* at 1400-02.

Cyanamid moved for reconsideration of several of the rulings adverse to it in *Cyanamid I*, and in *Cyanamid II*, I issued a written decision granting that motion in part and denying it in part. I agreed with Cyanamid that, given my interpretation of § 256 under the *General Electric* case, the Doctors' claims to equitable title to the Patent must also fall. 902 F.Supp. at 222- 23. Assuming a patent rendered erroneous as a result of deception is invalid and **[1171]** not subject to correction under § 256, I determined Plaintiffs' equitable title claim must fail because "'there can be neither legal nor equitable ownership of a void patent.'" *Id.* (quoting *Kennedy v. Hazelton*, 128 U.S. 667, 9 S.Ct. 202, 32 L.Ed. 576 (1888)). I ordered that summary judgment enter in Cyanamid's favor on Plaintiffs' equitable title claim, but denied the motion in all other respects.

Following a bench trial on the Doctors' and University's remaining claims, I issued the *Cyanamid III* decision. That decision included detailed findings of fact based on the submissions of the parties and thousands of pages of testimony and evidence received at trial. 974 F.Supp. 1339, 1343-52. Those findings included a chronology of the communications and studies leading to the reformulation of Materna, and a

determination that the work, studies and ideas ultimately patented by Cyanamid were discovered and developed by the Doctors, "[e]ntirely independent of Cyanamid." *Id.* at 1347.

My findings also tracked the web of deceit spun by Dr. Ellenbogen beginning soon after he received the manuscript of the Article in July 1981. *Id.* at 1348-50. Caught in this web was Cyanamid patent counsel Dr. Raymond, who knew the Doctors had authored the article from which much of the patent application was copied, but copied the material anyway based on Dr. Ellenbogen's representations that Cyanamid had paid for and he had designed all of the studies, and that the roles of the Doctors in them were merely technical. *Cyanamid III* at 1348-49. At trial, Dr. Raymond testified he would not have listed Dr. Ellenbogen as the reformulation's inventor had he known the true facts. *Id.* at 1349. Also included were Dr. Ellenbogen's repeated and deliberate attempts to conceal the patent application, and later the Patent itself, from the Doctors despite their continuing professional and personal relationships throughout that time. *Cyanamid III*, 974 F.Supp. at 1348-50.[5]

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[5] In October 1981, for example, when Dr. Allen attended Cyanamid's press conference announcing the reformulation, no one, including Dr. Ellenbogen, mentioned the patent application to him. In 1982, during dinner with Dr. Seligman at a meeting of the International Society of Obstetrics and Gynecology, Dr. Ellenbogen made a disgruntled remark that Dr. Allen "wasn't the only one" who knew about patents but said nothing about the pending patent application that used Dr. Allen's reformulation studies as its foundation. In 1983, when the Journal of Obstetrics and Gynecology agreed to publish the Doctors' revised Article, Dr. Ellenbogen remained silent despite having received, from Dr. Allen, a copy of the article together with the Journal's acceptance letter advising Dr. Allen that "prior publication of any portion of this article, including tables, figures or graphs ... will void this publication agreement." *Id.* at 1348. In 1984, when the Patent issued and Dr. Ellenbogen received an in- house award from Cyanamid-as its inventor, neither fact was disclosed to the Doctors even though Dr. Ellenbogen was working with them during that time on the Pramilet study (Study V). Significantly, moreover, when the bottles of Materna were shipped to the Doctors for use in the Pramilet study, the

Based on these findings, I determined (1) Dr. Ellenbogen did not invent the Materna reformulation and that the true inventors were Drs. Allen and Seligman; (2) given the longstanding personal and professional relationship between Dr. Ellenbogen and Dr. Allen, and the longstanding confidential working relationship between Cyanamid and the University Doctors, the filing of the patent application was a material fact that in equity and good conscience should have been disclosed regardless of who was named as the inventor; (3) Dr. Ellenbogen deliberately concealed the application so he could continue the beneficial relationship with Dr. Allen, while retaining for Cyanamid the financial and competitive benefits of the Doctors' reformulation idea and for himself recognition and reward from his employer; and (4) the Doctors acted on this concealment by continuing to work for and benefit Cyanamid unaware that their idea had been appropriated or **[1172]** that Cyanamid was working to exclude them and others from being able to use it in the future. *Cyanamid III*, 974 F.Supp. at 1347, 1353.

II. *THE FEDERAL CIRCUIT'S DECISION*

In affirming in part, vacating in part, and remanding the case for further proceedings, the Federal Circuit Court of Appeals made four specific rulings: (1) with respect to Plaintiffs' fraud and unjust enrichment claims, the causes of action stand but federal patent law, rather than state law, supplies the standard of inventorship under federal preemption principles, *Cyanamid*, 196 F.3d at 1371-73; (2) the damages awarded Plaintiffs on their fraud and unjust enrichment claims were erroneously calculated, *id.* at 1373-74; (3) my rejection of Plaintiffs' patent correction and equitable title claims in *Cyanamids I* and *II* was based on an erroneous interpretation of § 256, *id.* at 1374-75; and (4) my finding that Plaintiffs had failed to carry their burden of proving damages related specifically to Cyanamid's copyright in-

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labels which included the patent notice were obliterated by a sticker stating the contents were "FOR INVESTIGATIONAL USE" only.

fringement was correct such that Plaintiffs were not entitled to any damages on that claim. *Id.* at 1376.

A. *Fraud and Unjust Enrichment*

The principal finding of the Circuit Court was that the state law concepts of "ownership" or "inventorship" applied in *Cyanamid III* could not stand. The Court reasoned that while the fraudulent nondisclosure and unjust enrichment causes of action themselves "cover a broad range of conduct that does not bear on federal patent policies [and] are therefore not preempted by federal patent law," *Cyanamid,* 196 F.3d at 1371, the "federal Patent Act leaves no room for states to supplement the national standard for inventorship." *Id.* at 1372 (citing "explicit and detailed standards for inventorship" set forth at 35 U.S.C. §§ 101-03, 116-20, 254-56, 261-62).

Because I applied state law principles to find that the Doctors, rather than Dr. Ellenbogen, were the true inventors of the patented technology, the Federal Circuit concluded the principle of "field preemption" necessitated the vacatur of that finding and a reconsideration of the question of inventorship under federal patent standards on remand. *Id.* at 1373. As a result, the Court continued, those findings that "hinged" on this threshold determination-- namely: that Cyanamid had a duty to disclose the filing of the application to the Doctors; that Cyanamid was liable to the University for fraudulent nondisclosure; and that the University and the Doctors were entitled to damages--would necessarily also have to be vacated. *Id.* (the findings and conclusions along "[t]he district court's chain of reasoning" must also be vacated because they "hinge[ ] on the finding that the Doctors were inventors of the Materna reformulation"). And for the same reason, my conclusion that Cyanamid was liable to the University for unjust enrichment would also have to be vacated because, "[l]ike the fraudulent nondisclosure claim, unjust enrichment hinges on the finding that the Doctors invented reformulated Materna." *Id.* at 1374. *See also* 196 F.3d at 1375 (Federal Circuit's conclusion reiterating ruling).

I pause briefly to address Cyanamid's contention that these vacaturs "extinguish" *Cyanamid III* in its entirety, rendering it of "no further force and effect" and "depriv[ing] it of its standing so that the law of the case doctrine is inapplicable." Def.'s Mem. in Opp. to Pl.'s Mot. Entry of J. at 2-3 (citing *Creighton v. Anderson*, 922 F.2d 443, 449 (8th Cir.1990)). As a result, Cyanamid argues the Federal Circuit's mandate to reconsider the question of inventorship and, if necessary thereafter, the issue of damages or other equitable relief, precludes the reentry of judgment on remand without first reopening evidence and retrying these issues of fact. I find Cyanamid's contentions sweep too broadly and contrary to the content and tenor of the Federal Circuit Court's opinion.

[1173] The Federal Circuit's review, and therefore its mandate, was limited to the matters appealed. *See Laitram Corp. v. NEC Corp.*, 115 F.3d 947, 951 (Fed.Cir. 1997)(explaining that, upon return of a mandate, a district court cannot give relief beyond the scope of the mandate, but may act on matters left open by the mandate.) Here, the Federal Circuit took pains to identify those matters which were appealed and those which were not, *e.g.*, 196 F.3d at 1374 ("Cyanamid does not argue that the district court erred in any findings under its unjust enrichment analysis" and that "[t]herefore, this court does not review those findings"), and then parsed those matters further into those factual findings and legal conclusions which were necessarily vacated because they "hinged" on the erroneous threshold determination of inventorship, and those which were not.

In doing so, the Federal Circuit clearly approved the applicability of the state law causes of action asserted, and endorsed the "chain of reasoning" that led to the entry of judgment against Cyanamid on those claims. *See id.* at 1371-73 (rejecting Cyanamid's arguments that federal patent law preempted Plaintiffs' Colorado state law fraud and unjust enrichment claims and setting forth the elements of those claims under Colorado law). What it did not approve was the use of state law standards to resolve the threshold ques-

tions of inventorship and ownership on which those judgments rested. *Id.* at 1372.

Accordingly, as Plaintiffs correctly state, "[t]he linchpin" of the Federal Circuit's opinion and mandate as to Plaintiffs' fraud and unjust enrichment claims was "its conclusion that the judgment was based on the application of the wrong legal standard in determining inventorship." Pls.' Reply at 4. The mandate remanded the case for application of the correct legal standard to the facts elicited at trial. It did not expunge the facts elicited at trial or remand the case for a new trial. In fact, it left entire categories of factual findings intact because no appeal from them was taken. Such a mandate--premised on the approval of the crux of a cause of action and the "chain of reasoning" employed by the trial court in analyzing it--does not "extinguish" the underlying trial or deprive the proceedings of their "standing" for purposes of *res judicata*. It simply requires the trial court on remand to apply the correct law to the facts already determined to be sufficient to meet the correct legal standard. If they are, or if the record otherwise supports the Doctors' inventorship under the threshold inventorship determination to be reconsidered, then the mandate is satisfied. *See Laitram* at 952 (on remand, defendant was entitled to its requests for judgment as a matter of law, "which in no way were precluded by the mandate").

By approving this court's "chain of reasoning" as long as it flows from a proper determination of inventorship, the Federal Circuit's opinion and mandate will entitle the University to judgment as a matter of law on its fraud and unjust enrichment claims, without further proceedings, if the existing record supports such a determination. "[I]f the Doctors were inventors of reformulated Materna under federal patent law, [then] Cyanamid may be held liable pursuant to [both] the fraudulent nondisclosure claim" and the unjust enrichment claim which "hinges" upon it. 196 F.3d at 1374.

B. *Errors in the Damages Analysis on Fraud and Unjust Enrichment Claims*

Anticipating the possibility that judgment on the University's fraud claim might be reentered on remand, the Federal Circuit proceeded to correct certain errors in my damages determination on the fraud claim so those errors would not be repeated. Specifically, the Federal Circuit rejected my finding that any fraudulent nondisclosure on the part of Cyanamid "deprived [the University] of financial opportunities and prestige [it] would have enjoyed had their doctors been credited with the invention, and harmed Drs. Allen and Seligman both personally and professionally." **[1174]** *Cyanamid III*, 974 F.Supp. at 1353. The Court determined, based on the record, that the Doctors "intended to, and did, freely share their research results to allow Cyanamid to make and sell an improved Materna," and that "[n]either the Doctors nor the University sought to obtain a patent covering the reformulation." *Cyanamid*, 196 F.3d at 1373. By declining to seek a patent in their own right, the Doctors "chose to forego" an opportunity to gain the prestige associated with the inventorship of a patent and were, instead, "presumably satisfied" with the prestige associated with publication of a journal article detailing their research. *Id.* at 1373-74. "Given that the University had never been in the business of manufacturing or marketing prenatal vitamins," the Federal Circuit concluded "the only financial opportunity that the University could have lost was the payment for an assignment of ownership rights in the '634 Patent or a license from the University to sell the reformulated product at the time the patent issued." *Id.* at 1373.

> Consequently, even if the Doctors were inventors of reformulated Materna under federal patent law, Cyanamid may be held liable pursuant to the fraudulent nondisclosure claim, but only for the payment that Cyanamid would have made to secure the Doctors' cooperation in filing the required documents with the PTO, an assignment of ownership rights and/or an exclusive license from the University.

Id. at 1374. It is under this damages analysis that reconsideration of the University's fraud claim must proceed.

C. *Section 256 and Equitable Title Claims*

Also "hinging" on a determination that the Doctors were the true inventors of the '634 Patent subject matter are Plaintiffs' claims to correct the Patent under 35 U.S.C. § 256 and for equitable title, which were revived by the Federal Circuit on appeal. The claims were not reached in *Cyanamid III* because I had granted summary judgment on them in Cyanamid's favor in *Cyanamids I* and *II*. Relying on case law decided after those decisions, the Federal Circuit vacated the grant of summary judgment in favor of Cyanamid on the correction of inventorship issue because "the district court's premise--that the actual inventors could not be substituted for a fraudulently-named inventor in a patent without thereby invalidating the patent--was incorrect." 196 F.3d at 1374-75 (citing *Stark v. Advanced Magnetics, Inc.*, 119 F.3d 1551, 1555 (Fed.Cir.1997) and *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1350 (Fed.Cir.1998)). Finding my grant of summary judgment on the equitable title claim similarly "sprang from [a] belief that the fraudulent deletion from the patent document of the true inventors, i.e., the Doctors, would render the patent invalid," the Federal Circuit vacated the grant of summary judgment on that claim as well, finding that "[t]o the contrary, substitution of the Doctors as named inventors under 35 U.S.C. § 256, if warranted, would not invalidate the patent and would establish the University's equitable title to it." *Id.* at 1375.

Based on this reasoning, the Federal Circuit directed not only that both claims be reconsidered on their merits, but also, as with the University's fraud and unjust enrichment claims, that liability on the part of Cyanamid would flow directly from a finding, on remand, that the Doctors were the true inventors of the reformulation under federal patent standards.

III. *PLAINTIFFS' MOTION FOR REENTRY OF JUDGMENT ON REMAND*

In the wake of the Court of Appeals' decision, the University and the Doctors filed a Motion for Judgment as a Matter of Law on their fraud and unjust enrichment claims, as well as on the patent correction and equitable title claims the Federal Circuit determined were erroneously rejected in *Cyanamid I* and *II*. Plaintiffs claim the record developed during the trial and pretrial proceedings, together with those findings **[1175]** in *Cyanamid III* not challenged on appeal, are sufficient by themselves to establish the Doctors' status as the true inventors of the '634 Patent technology under federal patent standards and support the reentry of judgment in their favor on each of the claims "hinging" upon it. Taking into consideration the Federal Circuit's standards for interpreting § 256, this includes each of Plaintiffs' claims for fraud, unjust enrichment, correction of the '634 Patent under § 256, and for equitable title.

Cyanamid disagrees, arguing that use of the federal patent standard now shifts the focus from inventorship of the reformulation published by the Doctors in journals to inventorship of the specific '634 patent technology, which should be defined solely by the claims of the '634 patent and not the composition of a commercially-marketed product that happens to fall within its scope. Cyanamid denies Plaintiffs have offered any competent evidence under federal patent standards to rebut the presumption of correctness of the inventor named in the Patent, or to establish that they, rather than Dr. Ellenbogen, invented the Patent's broader subject matter. Even if the Doctors were found to be the true inventors of the patented technology under federal patent standards, Cyanamid argues entry of judgment as a matter of law is precluded because the existing record is insufficient to comport with the Federal Circuit's directives on damages. *See Cyanamid*, 196 F.3d at 1373. I agree in part and disagree in part.

IV. *DISCUSSION*

"Upon remand, the [district] court must apply federal patent law principles to determine whether the Doctors

and/or Dr. Ellenbogen were inventors of the technology of the '634 patent." *Id.* at 1372.

A. *The Federal Patent Scheme*

Title 35 of the United States Code sets forth the federal scheme for the protection of ideas and technology known as patent law. Under federal patent law, an invention must be novel, useful, and unobvious in order to qualify for patent protection. 35 U.S.C. §§ 101-103. The requirements are stringent and serve to effectuate the fundamental purpose of the United States patent system--the promotion of real innovation in science and technology. To motivate inventors to disclose innovations to the public, the system gives inventors a seventeen-year period during which an inventor holds exclusive rights to an invention in exchange for publicly disclosing his invention. 35 U.S.C. § 154; *see Graham v. John Deere Co.*, 383 U.S. 1, 6, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). In the absence of patent protection, all ideas in the public domain inure to the good of society. *Blonder-Tongue Lab. v. University of Illinois Foundation*, 402 U.S. 313, 345, 91 S.Ct. 1434, 28 L.Ed.2d 788 (1971).

As patents reward inventors for disclosing beneficial technology to the public, a person cannot reap the reward of exclusive rights to an invention without being the true inventor. *Agawam Co. v. Jordan*, 74 U.S. (7 Wall.) 583, 602, 19 L.Ed. 177 (1868). The importance of this requirement is reflected in the fact that the Patent Act twice states the person seeking patent protection must personally invent the subject matter of the invention. *See* Jackie Hutter, M.S., "A Definite and Permanent Idea? Invention in the Pharmaceutical and Chemical Sciences and the Determination of Conception in Patent Law," 28 J. Marshall L.Rev. 687, 695 (Spring 1995)(citing John W. Schlicher, Patent Law: Legal and Economic Principles, § 1.07 (1994), who notes that § 102(f) of the Patent Act expressly states that a person will lose patent rights if "he did not himself invent the subject matter sought to be patented," and § 101 providing that only " 'whoever invents or discovers ... may obtain a patent thereof ....' "). *See also* Monheit, R., "The Importance of

Correct Inventorship," 7 J. Intell. Prop. L. 191 (Fall 1999)(citing U.S. Const. art. I, § 8, cl. 8)(based on the Constitution's grant of power to Congress to promote science, a patent can be issued only to its inventors).

In the instant case, Dr. Ellenbogen and Cyanamid secured for themselves the right **[1176]** to exclude others from using technology that was intended to inure, and but for their actions would have inured, to the good of society in general. The question at trial, and now again on remand, is whether the actions of Dr. Ellenbogen and Cyanamid in concealing from the Doctors their efforts to secure for themselves these patent rights were fraudulent because it was the Doctors, and not Dr. Ellenbogen, who were the true inventors of the patented technology.

B. *Determination of Inventorship Under Federal Patent Act*

The threshold issue, as identified by the Court of Appeals, is whether the Doctors were, in fact, the true and sole inventors of the patented technology under federal patent, rather than state common law, standards.

Recitation of the federal patent standard for inventorship is relatively straightforward and is not, as far as it goes, significantly disputed in this case. *Compare* Pls.' Mot. Entry of J. pp. 4-5 *with* Def.'s Mem. Law in Opp. to Pls.' Mot. pp. 4-5 (both of which invoke the standard set forth in *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed.Cir.1994)). The inventor in patent law is the person who conceived the patented invention. *Burroughs*, 40 F.3d at 1228 (citing *Sewall v. Walters*, 21 F.3d 411, 415 (Fed.Cir.1994)). Conception, in turn, "is the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." *Id.* (citing *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed.Cir.1986) and *Sewall* at 415).

Conception is complete only when the idea is so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice, without

extensive research or experimentation. *Burroughs*, at 1228 (citing *Sewall* and *Coleman v. Dines*, 754 F.2d 353, 359 (Fed.Cir.1985)). Because it is a mental act, courts require corroborating evidence of the invention that would enable one skilled in the art to make the invention. *Id.* (citing *Coleman* at 359).

> Thus, the test for conception is whether the inventor had an idea that was definite and permanent enough that one skilled in the art could understand the invention; the inventor must prove his conception by corroborating evidence, preferably by showing a contemporaneous disclosure. An idea is definite and permanent when the inventor has a specific, settled idea, a particular solution to the problem at hand, not just a general goal or research plan he hopes to pursue. *See Fiers v. Revel*, 984 F.2d 1164, 1169 (Fed.Cir.1993); *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1206 (Fed.Cir.1991)(no conception of chemical compound based solely on its biological activity). The conception analysis necessarily turns on the inventor's ability to describe his invention with particularity. Until he can do so, he cannot prove possession of the complete mental picture of the invention. These rules ensure that patent rights attach only when an idea is so far developed that the inventor can point to a definite, particular invention.

Burroughs, 40 F.3d at 1228.[6]

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[6] In *Burroughs*, the Federal Circuit applied this standard to find that pharmaceutical company scientists conceived of, and were therefore properly named as inventors on six patents, various methodologies for using AZT in the treatment of HIV notwithstanding the fact that the efficacy of the conception could not be tested, or "reduced to practice," without the complex experimental skills and facilities available only at the National Institute of Health (NIH). The Court rejected the assertion of alleged infringer companies that the NIH scientists must be named coinventors under the doctrine of "simultaneous conception and reduction to practice" articulated by the Court in *Smith v. Bousquet*, 27 C.C.P.A. 1136,

The disputes over the issue of conception in the instant case, as they have developed [1177] on remand, are two-fold. The first involves the nature and scope of the technology patented and the distinction, urged by Cyanamid, between the Materna reformulation ideas developed in Studies II and IIA and described by Dr. Allen in his December 1979 and March 1980 letters and the "much broader" claims of the '634 Patent. *See* Def.'s Br. in Opp. at 4 & 13 (asserting there is "[n]o concept more fundamental to patent law ... than that 'the claims of a patent ... are the sole measure of the patent grant ....'") (quoting *Bandag, Inc. v. Al Bolser's Tire Stores, Inc.*, 750 F.2d 903, 922 (Fed.Cir.1984)). Cyanamid argues the Doctors cannot be *sole* inventors of these broader claims because Studies IA, II and IIA (and the 1979 and 1980 letters written by Dr. Allen) contemplated the use of different, and more restricted, quantities of calcium and magnesium oxide than the range patented by Cyanamid. Defs.' Br. at 6. At

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111 F.2d 157 (1940)(in the "unpredictable" and experimental sciences of chemistry and biology, in particular the uncertain relationship between chemical structure and biological activity, Court declined to find conception until the invention had been reduced to practice via experimentation). The Court explained that the rule in *Smith* was not absolute, and did not stand for the proposition that an inventor can "never" conceive an invention in an unpredictable or experimental field until reduction to practice. *Burroughs*, 40 F.3d at 1229. A conception is incomplete until reduction to practice in such a field "only if the subsequent course of experimentation, especially experimental failures, reveals uncertainty that so undermines the specificity of the inventor's idea that it is not yet a definite and permanent reflection of the complete invention as it will be used in practice." *Id.* (citing *Amgen* at 1207). In all other cases, the successful reduction to practice serves to *corroborate* what is already a complete concept, not finalize an indefinite one. *Id.*

I note that *Burroughs* has been criticized as an attempt to fit the facts surrounding the invention of AZT into the confines of a traditional, and outdated, definition of conception, resulting in a decision incongruous with *Smith* and its progeny when the subject matter of an invention, i.e., biotechnology, "may very well [and should] influence the issue of conception." *See also* Monheit, *supra*, at 200. The criticism, and my notice of it, is merely academic as neither side raises the principle of simultaneous conception and reduction as affecting the question of inventorship in this case.

most, according to Cyanamid, the Doctors' work was merely part of, or contributed to, the broader subject matter conceived of by Dr. Ellenbogan such that the Doctors could be considered no more than "joint" inventors, if anything, with him on the '634 Patent. *Id.* at 14 (citing *Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998) (citing 35 U.S.C. § 116)).

The second dispute flows from the first and involves the existence and sufficiency of any contemporaneous or other corroborating evidence to support the Doctors' claims of inventorship. Cyanamid contends the only proper corroborative evidence is that involving a contemporaneous disclosure, and denies Plaintiffs have any such evidence. According to Cyanamid, Plaintiffs' reliance on the trial record to satisfy federal patent law's corroboration requirement "perpetuat[es]" the flaw of ignoring the claims of the '634 Patent by analyzing inventorship "as if the only issue to be considered is 'who invented reformulated Materna.'" Defs.' Br. at 13. Because "none" of Plaintiffs' evidence qualifies as corroboration of the "broader" claims of the patent, Cyanamid contends the Doctors cannot, as a matter of federal patent law, overcome the "presumption of correctness" of the named inventor on the Patent and cannot, therefore, be "inventors" of the patented technology.

Cyanamid's arguments rest on three critical presuppositions: (1) that the claims of the '634 Patent are, in fact, "broader" than, or different from, the idea or concept the Doctors claim to have invented (which Cyanamid contends is limited to the 250 mg/25 mg composition of calcium carbonate and magnesium oxide in Reformulation B); (2) that the University's evidence actually is improper and insufficient to overcome the '634 Patent's "presumption of correctness"; and (3) that Cyanamid, by contrast, has come forward with proper and adequate corroborative evidence proving inventorship on the part of Dr. Ellenbogen. Not one of these premises survives rumination.

[1178] Cyanamid's position on the scope of the patent claims is a marvel of denial and contrivance. Perhaps it is

better described as the proverbial straw man. The Doctors have always maintained they are the true inventors of the invention claimed by Dr. Ellenbogen, i.e. the complete subject matter of the '634 Patent, and have never limited their claim to the 250/25 composition of reformulated Materna. A comparison of Cyanamid's 1981 patent application (Ex. 234) with the Doctors' 1981 New England Journal of Medicine article manuscript (Ex. 149), moreover, reveals that the scope of the patent claims is *precisely* that of the Doctors' Article. The patent application, quite simply, is derived virtually wholesale from the Article.

In the patent application, for example, Cyanamid summarized the invention as follows:

> This invention relates to multi-mineral, dietary supplement composition for the treatment of iron deficiency anemia which provide enhanced levels of iron bio-availability. This is achieved by the use of controlled levels of oxides and carbonates of coadministered minerals, such as calcium and magnesium ... [e]specially useful in prenatal therapy.

Patent Application (Tr. Ex. 234, p. 1). In describing the invention, Cyanamid continues:

> One of the most common causes of iron-deficiency anemia is that associated with pregnancy. During pregnancy and lactation, it is common to supplement the body's enhanced need of iron, calcium, magnesium and other minerals ... via a prenatal multivitamin, multimineral dietary supplement.[7]

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[7] From the Introduction of the Article:

> The recommended dietary allowance for many vitamins and mineral are increased for pregnant women .... Because the absorption of dietary iron is barely sufficient to compensate for normal external blood loss, the additional ... iron that must be absorbed daily throughout pregnancy must come from iron supplements.

It has now been found that the bio-availability of an iron supplement can be enhanced by controlling the levels of the oxides and carbonates of minerals such as calcium and magnesium used in the mineral supplement compositions .... It has now been found that the combined quantities of oxides and carbonates of the minerals coadministered with the iron play a substantial role in the bioavailability of the iron component and that the control of the upper limit of the combined quantities enhances the absorption of the iron supplement. Calcium and magnesium present principle problems in that magnesium is commonly employed in the form of magnesium oxide and calcium is commonly employed in the form of calcium carbonate.[8]

As the basis for these "findings," Cyanamid uses an almost verbatim recitation of the "Methods" section of the Article. *Compare* Patent App. at p. 5 *with* Article at p. 5 (describing Studies I-IV, how "venous blood samples" from "15 to 24 subjects" were "collected by hypodermic syringe," "clotted at room temperature," and "centrifuged at 4,000 g for 30 minutes at 4 <<degrees>> C to isolate the serum which is removed and stored at -20 <<degrees>> C" and how the subjects were "healthy menstruating female volunteers **[1179]** 21 to 45 years of age" with "normal hemoglobin and

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[8] From pp. 7 and 8 of the Article:

> [In] Study II ... we ... found significant ($P<0.05$) inhibition of iron absorption with calcium carbonate and magnesium oxide, and that the inhibitory effects of calcium carbonate and magnesium oxide were additive .... [In] Study III[IIA], [our] findings support[ed] our previous observation that calcium carbonate and magnesium oxide are responsible ... for the decreased iron absorption observed with the original formulation of Materna [and] *indicate that prenatal mulvitamin[sic]-mineral supplements can be formulated in a way [referencing the reductions in amounts of magnesium oxide and/or calcium carbonate used in the Materna reformulations tested in Study III] that results in values for iron absorption that are above the recommended mean value of 3.5 mg per day for pregnancy.* (Emphasis added.)

Id. at p. 2.

hematocrit valves" who had "fasted overnight"). Most significant, for our present purpose, is the inclusion and incorporation, into the application, of Table I and Figures 1-4 from the Article,[9] and the wholesale adoption of the "Results" section of the Article. *Compare* Patent App. at pp. 8-9 *with* "Results" section of Article, at pp. 6-8 (describing, in precisely the same narrative form, the chemical compounds, formulations and reformulations studied and the results of each of the Studies I--IV).

The support for, and entire basis of, the discoveries credited in the patent application to Dr. Ellenbogen are Studies I--IV and their results as described by the Doctors in the text of their Article and as summarized by the Doctors in Table I and Figures 1-4. Cyanamid's attempt, in its briefs, to distinguish the patent claims from the breadth and scope of the Article range from the generally unpersuasive to the blatantly disingenuous. Referencing Dr. Allen's statement in his September 1979 letter that "iron absorption from prenatal capsules could be increased markedly if ... the amount of magnesium oxide was reduced or omitted entirely," for example, Cyanamid, in almost unctuous terms, states Dr. Ellenbogen, "unlike Dr. Allen ... recognized the

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[9] The completeness, and obviousness, of the wholesale lifting of the Doctors' work in Table I and Figures 1-4 cannot be overstated. The clear and convincing weight of the evidence supports a finding that not only is Table I a replication of Table I in the Doctors' Article, but it is an actual photocopy of the Table. Dr. Allen testified in detail, and the face of the document bears out, that Cyanamid actually cut Table I out of the Article manuscript, cut and trimmed along the length of the columns to remove excess space between them, deleted references to "Stuartnatal," "Materna" and other name brands of supplements and retyped them as acronyms or other shortened forms, trimmed away the footnotes, pasted the table back together again and photocopied it into the application. *Cyanamid I* at 1400-01; *Cyanamid III* at 1348; *see* Dr. Allen's testimony, Trial Tr. at pp. 449:13--453:9 (noting different typeface and left justification of retyped words and acronyms, gaps and breaks where the line running across the columns was cut and numerous other indications that, together with the patent application itself, clearly and convincingly supported a finding of photocopying).

importance of magnesium for pregnant women, causing him to reject Dr. Allen's suggested elimination of magnesium oxide." Defs.' Br. in Opp. at p. 12. As a initial matter, Dr. Allen's letter does not "suggest" the elimination of magnesium oxide. It simply confirms what is the essence of the invention patented, namely, that iron absorption is enhanced the more the amounts of absorption-inhibiting mineral salts like calcium carbonate and magnesium oxide are reduced. And most telling, for present purposes, is Cyanamid's wholesale adoption of Dr. Allen's position in the patent application where, at page three, Cyanamid writes:

> While calcium and magnesium are almost always present in multi-mineral compositions, especially in the case of prenatal compositions, they are less necessary from a dietary supplement point of view in that adequate quantities of each can be maintained through proper diet. In contrast, however, prenatal supplementation of iron is very important.
>
> *Accordingly, in the compositions of the present invention, the quantities of calcium and magnesium can be reduced to zero.*

(Ex. 234 at p. 3) (emphasis added). This statement belies any great "recognition" Dr. Ellenbogen had of the "importance of magnesium for pregnant women," or, if he indeed had such a recognition, causes one to wonder why he would phrase his patent claims as he did.

Because the ranges of the compositions reflected in the patent claims are identical to and based exclusively on the ranges of compositions tested and discussed in the Article, the assertion that the patent claims are somehow "broader" or "other than" those described by the Doctors is rejected.

[1180] In a tacit acknowledgment of this, Cyanamid next argues that the ideas for the processes and reformulations tested in Studies II, IIA and III, were actually Dr. Ellenbogen's, not the Doctors', such that copying the Article into the patent application was really copying Dr. Ellenbogen's own invention. To make this argument, Cyanamid focuses on Dr. Allen's 1979 and 1980 letters, suggesting that

the Doctors, at both times, were on the wrong track and were corrected, in their concept and design, by Dr. Ellenbogen.

Cyanamid first points to the suggestion in Dr. Allen's post-Study II December 1979 letter that iron absorption "could be increased markedly if calcium sulfate were used in place of carbonate." Because Study III did not follow this suggestion, and used reformulations of Materna that continued to use calcium carbonate, rather than calcium sulfate, Cyanamid contends "the only reasonable inference to be drawn ... is that the conception of reformulating Materna with reduced amounts of calcium carbonate and magnesium oxide originated with Dr. Ellenbogen." Absolutely not.

The full context of Dr. Allen's 1979 letter reveals that the Doctors had learned that both the calcium carbonate and the magnesium oxide in Materna inhibited the absorption of iron, while the calcium sulfate in Stuartnatal did not. In this greater context, and as corroborated by the testimony and other evidence presented at trial, it is clear that Dr. Allen knew both that reformulating Materna with reduced amounts of calcium carbonate and magnesium oxide would enhance absorption, and also knew that replacing calcium carbonate with calcium sulfate would do so even more effectively. The simple fact, however, was that the makers of Stuartnatal, the entity whose claims of superior iron absorption were the impetus for the Studies in the first instance, used calcium sulfate in their competing product, and Cyanamid did not want to reformulate its Materna brand to concede this in any way. So the Doctors dropped the calcium sulfate reformulation, as a concession to the marketing needs and desires of Cyanamid. This neither establishes that the Doctors' concept was somehow limited to reformulations using calcium sulfate nor does it refute, by implication, that it was the Doctors who came up with the idea of achieving enhanced absorption with reformulations that retained the use of calcium carbonate. And it certainly does not establish, by some kind of negative inference, that the ideas, from the outset, were Dr. Ellenbogen's.

Cyanamid also attempts to attach dispositive meaning to the fact that Dr. Allen's March 1980 letter, written to report the results of Study IIA, suggested a 200mg/25mg calcium carbonate/magnesium oxide reformulation of Materna when Study III went ahead using a 250 mg/25 mg reformulation instead. Cyanamid, again, contends the only reasonable inference to be drawn from this is that Dr. Ellenbogen came up with the idea for reformulated Materna, because 250/25 was the formulation ultimately adopted for new Materna. Not only does that inference not necessarily follow, but the fact it is intended to establish, even if true, is immaterial.

The essence of the invention is not, as Cyanamid itself has argued, the specific formulation of 250 mg of calcium carbonate and 25 mg magnesium oxide.[10] Its essence is the idea patented, and reflected in Dr. Allen's 1979 and 1980 letters as well as the Article, that calcium carbonate and magnesium oxide inhibit iron absorption from prenatal supplements and their reduction, in a range from 350 mg/25 mg to zero, will improve iron absorption over original Materna to levels approaching, then exceeding, the 3.5 mg recommended for pregnant women and, at the 200 mg/0mg range, should approach absorption rates approaching that for iron ingested **[1181]** alone. The fact reformulated Materna used 250 mg of calcium rather than the 200 mg recommended by Dr. Allen in his March 1980 letter in no way disproves that he, together with Dr. Seligman, came up with the idea, tested in Study IIA, that reducing the combined amounts of calcium carbonate and magnesium oxide from the 350 mg and 100 mg included in original Materna to the threshold level of inhibition generally and then to zero, would improve iron absorption in amounts directly related to the level of the reduction. Thus, the fact that Reformulation B used a lesser reduction than the reduction suggested by Dr. Allen

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[10] This, I note, completely contradicts Cyanamid's argument above that the essence of the invention is "much broader" than the specific iron/calcium carbonate/magnesium oxide formulation sold as reformulated Materna.

in his letter is largely immaterial. What is salient is that both were reductions, and the idea that all levels of reductions from the 350/100 formulation of original Materna would increase iron absorption for pregnant women was the Doctors', not Dr. Ellenbogen's.

Finally, I note that the weight of the evidence at trial contravened any suggestion by Cyanamid, then or now, that the decisions to use calcium carbonate, rather than sulfate, or 250 mg of carbonate rather than the 200 mg threshold level suggested by Dr. Allen, were based on any scientific conception or know-how of Dr. Ellenbogen. To the contrary, the evidence at trial established, clearly and convincingly, that these decisions were precipitated by marketing considerations and Cyanamid's desire to distance itself from, and obtain marketing advantage over, the makers of Stuartnatal. Cyanamid not only rejected a reformulation of Materna that would make it more like Stuartnatal, it actively sought a reformulation that allowed it to represent that Materna provided more calcium than the 200 mg of calcium sulfate provided in a dose of Stuartnatal. As Cyanamid itself set forth in the patent application,

> [T]he invention is not limited to the materials [sulfate or carbonate], proportions [250 mg or 200 mg], methods and the like specifically described and exemplified [in Table I] below, *which can be modified without departing from the scope of the invention.*

(Ex. 234 at p. 4) (emphasis added).

Dr. Allen knew that. It was his idea. And that is why there is nothing salient or dispositive in either Dr. Allen's 1979 or 1980 letters suggesting a switch to calcium sulfate or a reformulation using 200, rather than 250, mg of calcium carbonate. (Both of these, I note, would have provided even greater absorption of iron according to the invention patented by Cyanamid than did the actual reformulation of Materna sold under the Patent).

C. *Specific Findings Regarding Inventorship*

Based on the foregoing, and in accordance with the Federal Circuit's mandate, I make the following findings of fact and conclusions of law on the issue of inventorship. In making these findings, I apply the federal patent standard for inventorship set forth in *Burroughs*.

1. The essence of the patented invention is that (1) large amounts of calcium carbonate and magnesium oxide, both of which are present in most prenatal multivitamin-mineral supplements, inhibit the absorption of iron, and their inhibitory effects are additive; and (2) iron absorption from prenatal multivitamin/mineral supplements may be enhanced by decreasing the total amounts of these calcium and magnesium salts in ranges suggested by the results of Studies III and IV as set forth in Table I (i.e., from a high of 350 mg of calcium carbonate and 25 mg of magnesium oxide that achieved absorption in the amount 3.0 mg of iron per day, to amounts like 250 mg of calcium carbonate and 25 mg of magnesium oxide present in Reformulation B or that achieve absorption above the recommended value of 3.5 mg of iron per day).

2. Doctors Allen and Seligman, not Dr. Ellenbogen, invented the subject matter of the '634 Patent. It was the Doctors, not Dr. Ellenbogen, who conceived of the invention ultimately patented by Cyanamid.

[1182] a. It was the Doctors who, in late 1979, conceived of and tested the idea that calcium carbonate and magnesium oxide inhibited iron absorption in prenatal multivitamin/mineral supplements (Studies IA and II) and conceived of and tested the idea that reducing those components would improve iron absorption in pregnant women (Study II). It was the Doctors who, in early 1980, then conceived of and designed a test for identifying the ranges and types of reductions that would allow iron absorption

in amounts approaching, and then exceeding, the 3.5 mg per day recommended for pregnant women (Study IIA, as confirmed and honed in Studies III and IV).

b. These ideas were more than a general goal or research plan: They were specific and settled solutions to the particular problem at hand, which was the inadequacy of either original Materna or Stuartnatal to allow adequate iron to be absorbed from supplements intended to supply it. The ideas were definite and permanent enough at the time Studies II and IIA were completed that those skilled in the arts of pharmacology or biomedical research could understand them and replicate the studies on which they were based.

c. The Doctors described their invention with particularity, both in the greater context of Dr. Allen's December 1979 and March 1980 letters and in their 1981 New England Journal of Medicine article manuscript, which formed the basis, entirely, for the 1981 patent application and the resulting '634 Patent.

d. The 1979 and 1980 letters, the Article describing Studies I--IV and copied by Cyanamid into the patent application, viewed in the context of the respective conduct of the parties during the relevant time period and at trial, constitute corroborating evidence of this conception. I reject Cyanamid's contention that the only competent corroboration is that provided by contemporaneous disclosures, but even so find that the 1979 and 1980 letters are such disclosures. I specifically find that Cyanamid has not, and cannot, provide any evidence, other than the testimony of Dr. Ellenbogen, to corroborate its claims of conception, and repeat, in the strongest of terms, that I did not believe Dr. Ellenbogen at trial and continue to disbelieve him now. My review of the testimony at trial and reconsideration of all the

evidence in light of the post-trial briefs and arguments serves to intensify my finding that Dr. Ellenbogen is utterly lacking in credibility.

3. I further reject Cyanamid's contention that the "presumption of correctness" to which issued patents are entitled has not been overcome by the evidence presented by Plaintiffs. Cyanamid argues that "proven misconduct by Dr. Ellenbogen" cannot corroborate the inventorship claim of the Doctors because Plaintiffs cannot satisfy their burden of proof by casting doubt on Cyanamid's evidence. I do not rely on my findings regarding Dr. Ellenbogen's misconduct and lack of credibility as "corroboration" of the Doctors' inventorship. I rely on those findings to reject the only evidence offered by Cyanamid to refute the Doctors' other corroborating evidence, namely, the course of the Studies, the 1979 and 1980 letters of Dr. Allen, the Article manuscript, and Cyanamid's copying thereof into the patent application.

Cyanamid has no other evidence besides the testimony of Dr. Ellenbogen either to refute Plaintiffs' evidence or to prove that Dr. Ellenbogen, in fact, conceived of the patented invention. I found Dr. Ellenbogen's testimony lacking in credibility based on my careful consideration of his demeanor on the witness stand and the substance of his testimony on direct and cross- examination. I found Dr. Ellenbogen misrepresented to Dr. Raymond and to Cyanamid generally his role in the Studies and in their design, and in the design and **[1183]** conception of the invention ultimately patented. I drew a negative inference from the destruction, or "misplacement," of the copies of the Record of Invention that were supposed to have been kept for the life of the patent but which were not. These findings, together, do more than "cast doubt on Cyanamid's evidence." They refute, entirely, the only evidence

Cyanamid has either to support its claims of inventorship or to refute the substantial corroborative evidence presented by the University and Doctors Allen and Seligman.

4. I reject Cyanamid's assertion, in the alternative, that the Doctors were joint inventors with Dr. Ellenbogen of the patented invention. The definite and permanent idea of the complete and final invention was exclusively that of the Doctors, and they are the true and sole inventors of the subject matter of the '634 Patent.

V. RECONSIDERATION OF PLAINTIFFS' CLAIMS IN LIGHT OF THE NEW INVENTORSHIP DETERMINATION

Having determined that the Doctors were the true and sole inventors of the subject matter of the '634 Patent, I reconsider Plaintiffs' specific claims in accordance with the Federal Circuit's mandate and opinion.

A. *Fraud and Unjust Enrichment*

Fraud

As set forth above, the finding that the Doctors invented the subject matter of the '634 Patent is dispositive of Plaintiffs' fraud claim on remand. Having made the determination that the Doctors were the true and sole inventors of the matters patented, I now reiterate that this gave rise to a duty on the part of Cyanamid to disclose the filing of the patent application to the Doctors; that Cyanamid failed so to disclose; that the Doctors acted on this concealment by continuing to work for and to benefit Cyanamid, unaware that their ideas had been appropriated and that Cyanamid was trying to exclude them and others from the benefits of their ideas in the future, and by failing to seek to have their names included in the application or to prevent the issuance of the patent in Dr. Ellenbogen's name; and that both they[11]

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[11] Specifically, I find the Doctors individually suffered loss because they were deprived of an opportunity to prevent the patenting of their

and the University were injured thereby. *See Cyanamid*, 196 F.3d at 1373-74, *Cyanamid III*, 974 F.Supp. at 1353. I also reiterate my finding that the conduct of Dr. Ellenbogen and Cyanamid in betraying the Doctors' trust, exploiting their work, and thwarting their intent that their discovery inure to the benefit of the public generally, and not just to Cyanamid, was attended by circumstances of fraud, malice, and willful and wanton misconduct for purposes of Colo.Rev.Stat. § 13-21-102(1)(a).

The more difficult issue, on remand, is the nature and amount of actual damages to be awarded on the reentered judgment against Cyanamid on Plaintiffs' fraud claims. The Federal Circuit's directive is that Cyanamid may only be held liable "for the payment that Cyanamid would have made to secure the Doctors' cooperation in filing the required documents with the PTO, an assignment of ownership rights and/or an exclusive license from the University." 196 F.3d at 1374. In setting the amount of damages, I am to consider the "usual and customary arrangements at the time of the filing of the patent application," bearing in mind "that university licensing barely existed as of the filing date of the '634 patent in [December] 1981." *Id.*

After consideration of the parties' respective arguments in their briefs, I have determined that all issues of damages should be reopened and the parties afforded an opportunity to present additional evidence on the issue of actual damages **[1184]** and related equitable remedies to be awarded Plaintiffs and on the issue of punitive damages to be awarded to the Doctors. Both parties will be permitted to introduce new damages evidence and, if necessary, to conduct specific and limited discovery on these issues before trial. The nature and scope of the issues, and any discovery necessary to develop them, are issues that will be addressed in a com-

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invention and because they were deprived of any payment or other tangible benefits they may have been offered to secure their cooperation in filing the required documents with the PTO.

bined scheduling/trial preparation conference to be set by separate order.

Unjust Enrichment

Because, like fraud, Plaintiffs' unjust enrichment claim "hinges" on the finding that the Doctors invented the subject matter of the '634 Patent, my findings above allow for the reinstatement of my conclusion in *Cyanamid III* that Cyanamid was unjustly enriched by its appropriation of the Doctors' invention and is liable to the University therefor in equity. 196 F.3d at 1374. As the Federal Circuit noted, Cyanamid, on appeal, did not raise any issues with regard to my findings under the unjust enrichment analysis, and I again conclude that a benefit was conferred on Cyanamid by the Plaintiffs under circumstances that make its retention, without compensation, inequitable.

While I addressed Cyanamid's affirmative defenses at length in *Cyanamid III*, Cyanamid again raises the Restatement of Restitution on remand to argue no claim for unjust enrichment can be sustained under any finding of inventorship, because the Doctors "freely conveyed" the results of the reformulation studies to Cyanamid, "without restriction of any kind, but with the expectation that Cyanamid would use the information for its commercial benefit." Defs.' Mem. Law at 20. While this statement is true, it underscores a continuing and fundamental misapprehension of law on the part of Cyanamid by Cyanamid that goes to the heart of the issues in this case.

The unfair and unauthorized benefit secured by Cyanamid was *not* its use and manufacture of reformulated Materna, but the *right to exclude*--through exercise of federal patent rights--generic drug companies, doctors, nutritionists and, ultimately, large numbers of pregnant women, from also benefitting from their work. *See Cyanamid III* at 1354-56 ("Cyanamid did much more than simply use and market an idea that was in the public domain: Cyanamid patented it .... In doing so, [Cyanamid] removed the reformulation from the free marketplace of ideas in direct contravention of those who invented it.") Cyanamid, in fact, thwarted what the

Doctors intended "freely" to convey, and that is a complete and definite research-based idea for reformulating prenatal supplements that would inure to the benefit of all of these, and not just Cyanamid. *See* (Ex. 79)(Dr. Allen's 1979 letter expressing his belief that a prenatal capsule reformulated as suggested by his research "would be of definite benefit to pregnant women *and would also benefit* [Cyanamid] since its share of the prenatal market should increase dramatically").

Again, what is interesting on remand is not the judgment of liability in favor of Plaintiffs--which I reiterate--but the nature and scope of the remedy to be awarded. In *Cyanamid III*, I did not award any additional monies or compensation to Plaintiffs on their unjust enrichment claim because I found that the University's loss and Cyanamid's gain coincided. The benefit to be disgorged (Cyanamid's post-Patent profits gained as a result of having the Patent) was the same as the damages originally awarded for fraud. 974 F.Supp. at 1358-59. Under these circumstances, I concluded, there was no basis upon which to award the University a share of Cyanamid's post-Patent profits over and above the 1981 value of the stolen idea. *Id.* at 1359.

The Federal Circuit did not address my disgorgement analysis, but clearly its shape is altered by the Court's rulings regarding the nature of the Plaintiffs' loss. Under the Federal Circuit's analysis, and because the Doctors intended to, and did, freely share their research results to allow **[1185]** Cyanamid to make and sell a reformulated Materna, the only financial opportunity that the University could have lost was the payment for an assignment of ownership rights in the '634 Patent or a license from the University to sell the reformulated product. 196 F.3d at 1373. Viewed in this light, the University's recoverable damages may be significantly less than the unfair benefit gained by Cyanamid or, perhaps, as Cyanamid will undoubtedly argue, they still coincide. The question of the proper amount, if any, Cyanamid should be required as a matter of equity to disgorge is one

that will be decided in the proceedings related to the limited retrial on damages issues referenced above.

B. *Section 256 and Equitable Title*

The Patent Act requires that an applicant for a patent disclose the names of all inventor(s) of the subject matter of the invention to be patented. 35 U.S.C. §§ 111, 115-16 (1994). The Act also authorizes correction of the inventor(s)' names in applications, 35 U.S.C. § 116, and in patents, 35 U.S.C. §§ 256. Section 256 permits correction by application to the Commissioner or in federal court:

> § 256. Correction of named inventor.
>
> Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Director may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.
>
> The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Director shall issue a certificate accordingly.

The Federal Circuit vacated my earlier grant of summary judgment in Cyanamid's favor on Plaintiffs' §§ 256 claim, relying on *Stark v. Advanced Magnetics*, 119 F.3d at 1555 (*Stark II*) to conclude that the substitution in this case of the Doctors as named inventors would not invalidate the patent regardless of whether the misjoinder of Dr. Ellenbogen occurred as a result of deception or was simply an innocent mistake. *See* 196 F.3d at 1374-75. "[S]ection 256 allows complete substitution of inventors as long as the true inventors are without deceptive intent." *Stark II* at 1556.

Pursuant to these authorities, and in accordance with the law of the case as determined by the Federal Circuit on appeal, I find the true inventors in this case to be without deceptive intent and order the correction of the '634 Patent at issue corrected to delete Dr. Ellenbogen as the inventor of the Patent's subject matter and to substitute for him the names of the true inventors, Drs. Robert H. Allen and Paul A. Seligman.

Also in accordance with the law of the case as determined by the Federal Circuit, I find and conclude that this substitution of the Doctors as named inventors under 35 U.S.C. § 256 establishes the University's equitable title to the '634 Patent. *See* 196 F.3d at 1375.

VI. *CONCLUSION*

For the foregoing reasons, I hold that the Doctors are the true and sole inventors of the subject matter of the '634 Patent under federal patent standards, and that Cyanamid is liable to them and to the University on Plaintiffs' claims for fraud and unjust enrichment. Based on my findings and conclusions reiterated and supplemented herein, the punitive damages award of $500,000 each to Drs. Allen and Seligman is vacated, and a new amount will be assessed against Cyanamid in their favor. The nature and amount of Plaintiffs' actual damages under their fraud claim, and the nature and amount of any funds Cyanamid, as a matter of equity, should be ordered to disgorge, shall be determined after a retrial on the issue of **[1186]** damages, to be set forthwith by separate order.

Further, and as the true and sole inventors whose nonjoinder in the '634 Patent was not the result of any fraud or deceptive intent on their part, Plaintiffs are also entitled to judgment on their claim for correction of the Patent under 35 U.S.C. § 256 as well as on their claim for equitable title. The Director of the Patent and Trademark Office shall issue a certificate correcting the '634 Patent to delete Dr. Leon Ellenbogen as the inventor of the Patent's subject matter and to substitute for him the true inventors Dr. Robert H. Allen and Dr. Paul A. Seligman.

IT IS SO ORDERED.

[1187] APPENDIX

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APPENDIX I

TABLE I

SUMMARY OF IRON FORMULATIONS AND IRON ABSORPTION IN VARIOUS EXPERIMENTS

Iron Preparation	Amount of Iron Ingested (mg)	Form and amount of calcium and magnesium present or (added) at the time of ingestion				Calculated mean values for iron absorption in various studies				
		Calcium sulfate (mg)	Calcium carbonate (mg)	Magnesium oxide (mg)	Magnesium hydroxide (mg)	Study I (%)	Study II (%)	Study III (%)	Study IV (%)	Average (%)
Ferrous fumarate	65	-	-	-	-	8.0	9.0	-	7.3	8.1
SI	65	200	-	100	-	2.0	-	1.3	2.2	1.8
MO	60	-	350	100	-	2.8	-	-	-	
Ferrous fumarate	65	(200)	-	"	-	-	9.5	-	-	
Ferrous fumarate	65	-	(350)	-	-	-	6.8	-	-	
Ferrous fumarate	65	-	-	(100)	-	-	6.6	-	-	
Ferrous fumarate	65	(200)	"	(100)	-	-	6.2	-	"	
Ferrous fumarate	65	-	(350)	(100)	-	-	4.3	-	"	
New Formulation A	60	-	350	25	-	-	-	3.0	-	
New Formulation B	60	-	250	25	-	-	-	5.0	4.1	4.5
NL	60	-	200	-	100	-	-	-	2.4	
NF	65	-	350	100	-	-	-	-	3.0	

[1188]

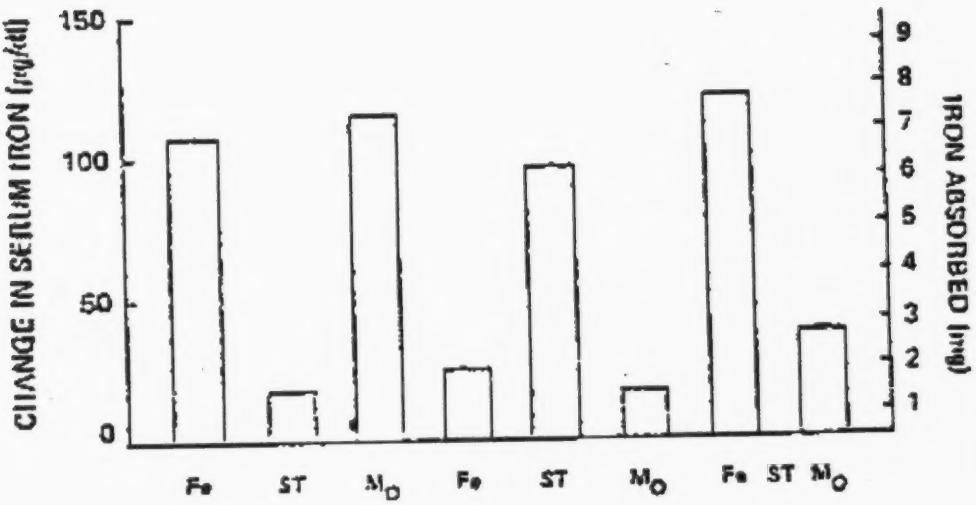

FIGURE 1

FIGURE 1

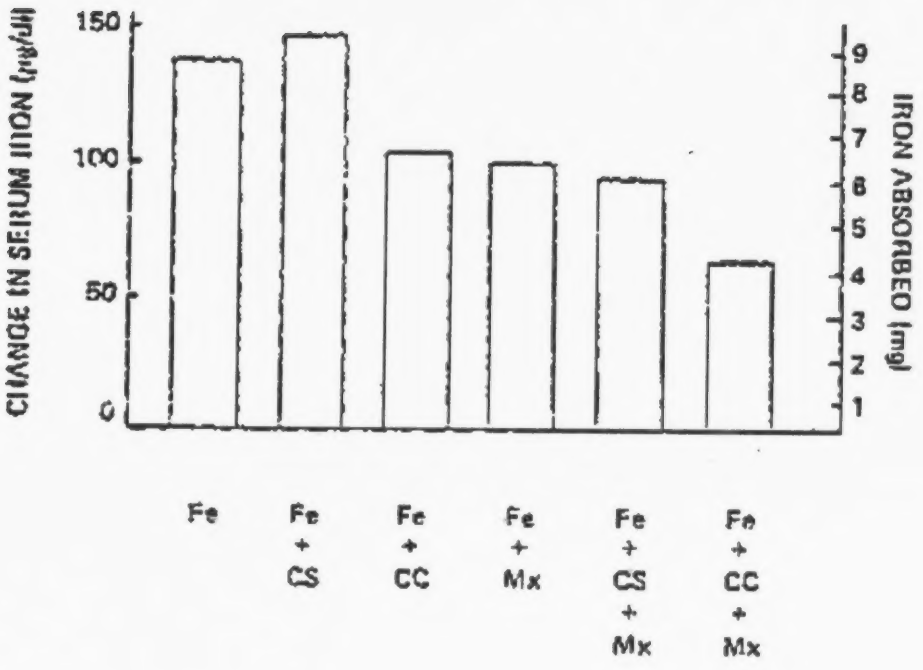

FIGURE 2

FIGURE 2

[1189]

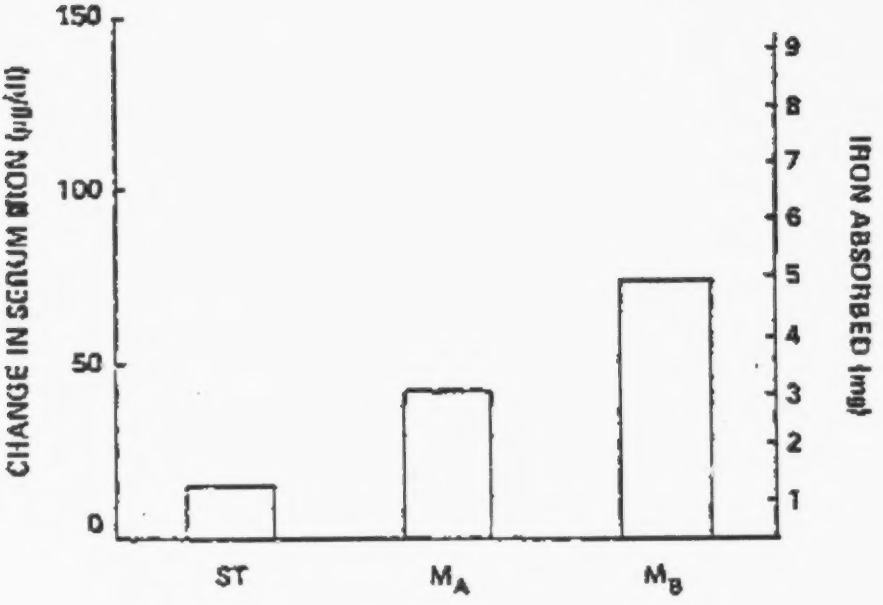

FIGURE 3

FIGURE 3

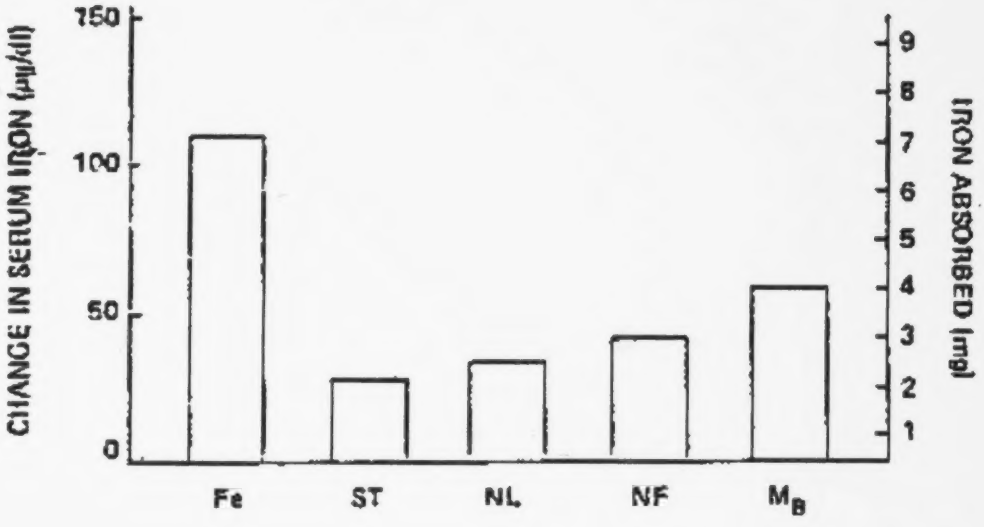

FIGURE 4

FIGURE 4
[1190] APPENDIX 2

APPENDIX 2

TABLE I

SUMMARY OF IRON FORMULATIONS AND IRON ABSORPTION IN VARIOUS EXPERIMENTS

Iron Preparation	Amount of iron Ingested (mg)[a]	Form and amount of calcium and magnesium present or (added) at the time of ingestion				Calculated mean values for iron absorption in various studies				
		Calcium sulfate (mg)[a]	Calcium carbonate (mg)[a]	Magnesium oxide (mg)[a]	Magnesium hydroxide (mg)[a]	Study I (%)	Study II (%)	Study III (%)	Study IV (%)	Average (%)
Ferrous fumarate	65	-	-	-	-	6.0	9.0	-	7.3	8.1
Stuartnatal	65	200	-	100	-	2.0[b]	-	1.3[d]	2.2[b]	1.6
Materna-original	60	-	350	100	-	2.8[b]	-	-	-	
Ferrous fumarate	65	(200)	-	-	-	-	9.5	-	-	
Ferrous fumarate	65	-	(350)	-	-	-	6.8[b]	-	-	
Ferrous fumarate	65	-	-	(100)	-	-	6.6[b]	-	-	
Ferrous fumarate	65	(200)	-	(100)	-	-	6.2[b]	-	-	
Ferrous fumarate	65	-	(350)	(100)	-	-	4.3[bc]	-	-	
Materna-reformulation A	60	-	350	25	-	-	-	3.0[d]	-	
Materna-reformulation B	60	-	250	25	-	-	-	3.0[d]	4.1[bc]	4.5
Natalins	60	-	200	-	100	-	-	-	2.4[b]	
Natafort	65	-	350	100	-	-	-	-	3.0[b]	

a - refers to the weight of elemental iron, calcium or magnesium and not to the weight of the entire salt. Iron is present in the form of ferrous fumarate in all of the prenatal multivitamin-mineral pills.

b - $P<0.05$ when compared to iron alone.

c - $P<0.05$ when compared to iron + calcium carbonate and iron + magnesium oxide.

d - $P<0.05$ when any one is compared to either of the other two.

e - $P<0.05$ when compared to Stuartnatal or Natalins.

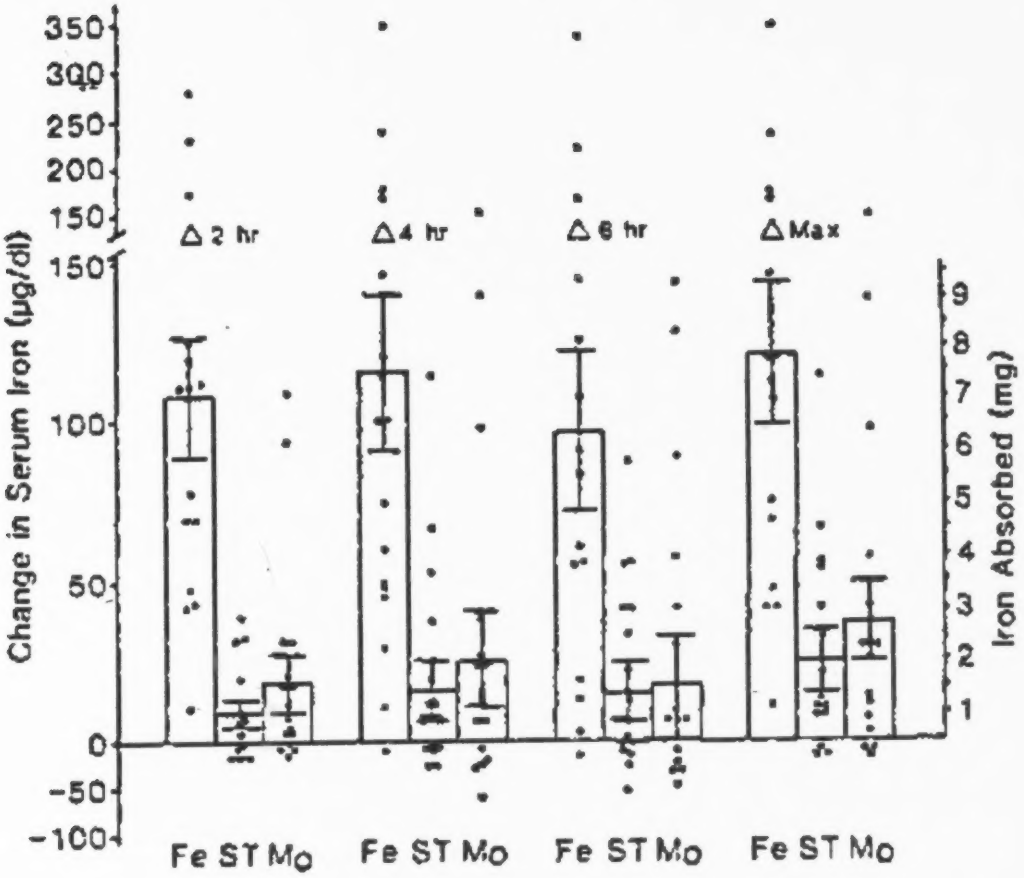

FIGURE 1

FIGURE 1
[1192]

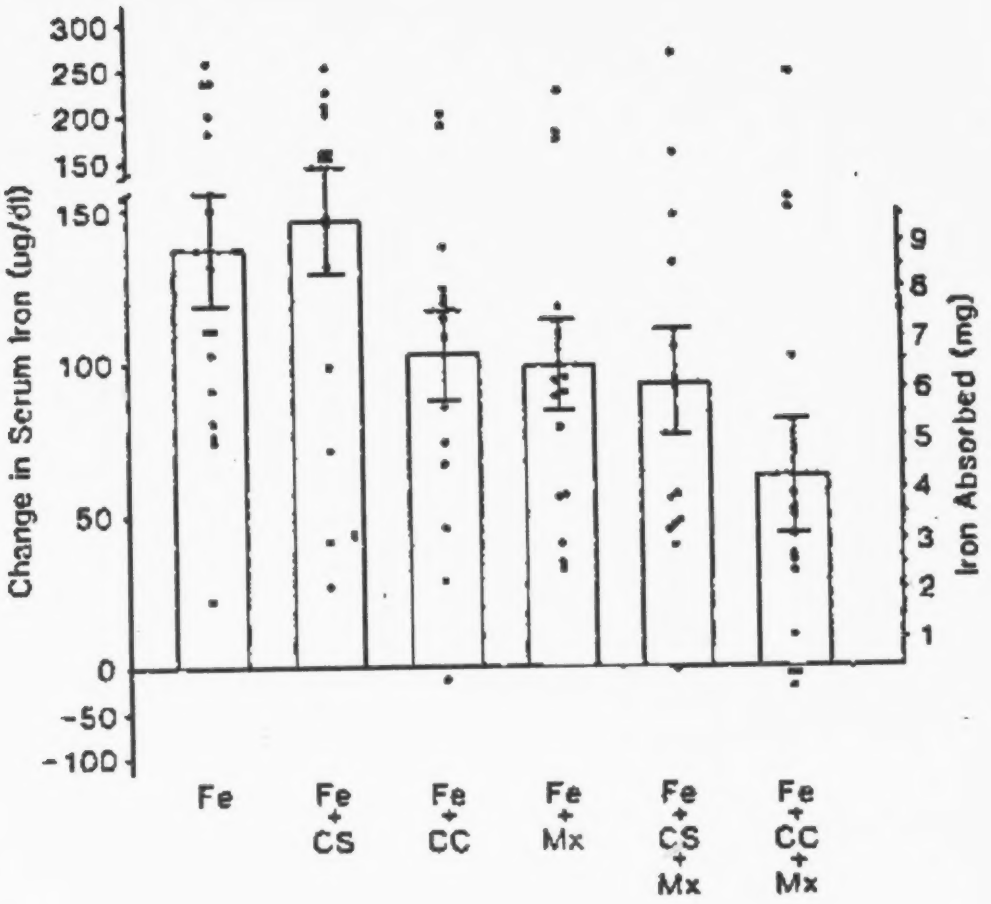

FIGURE 2

FIGURE 2

[1193]

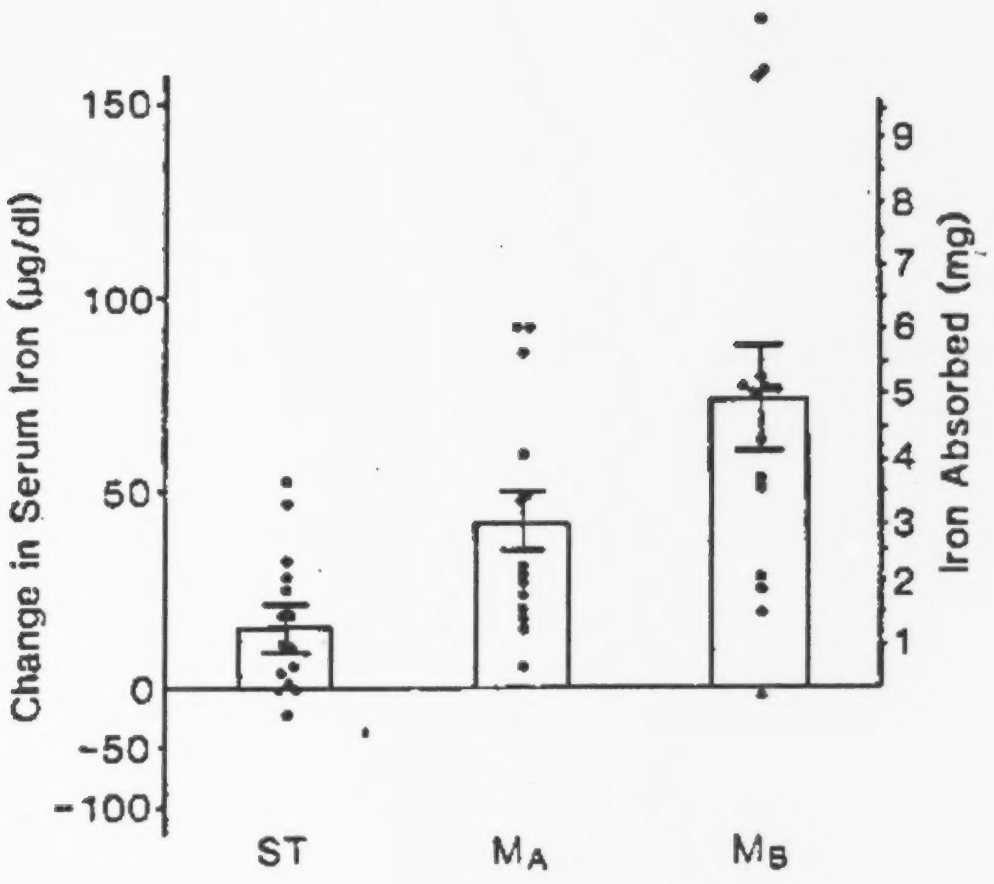

FIGURE 3

FIGURE 3

[1194]

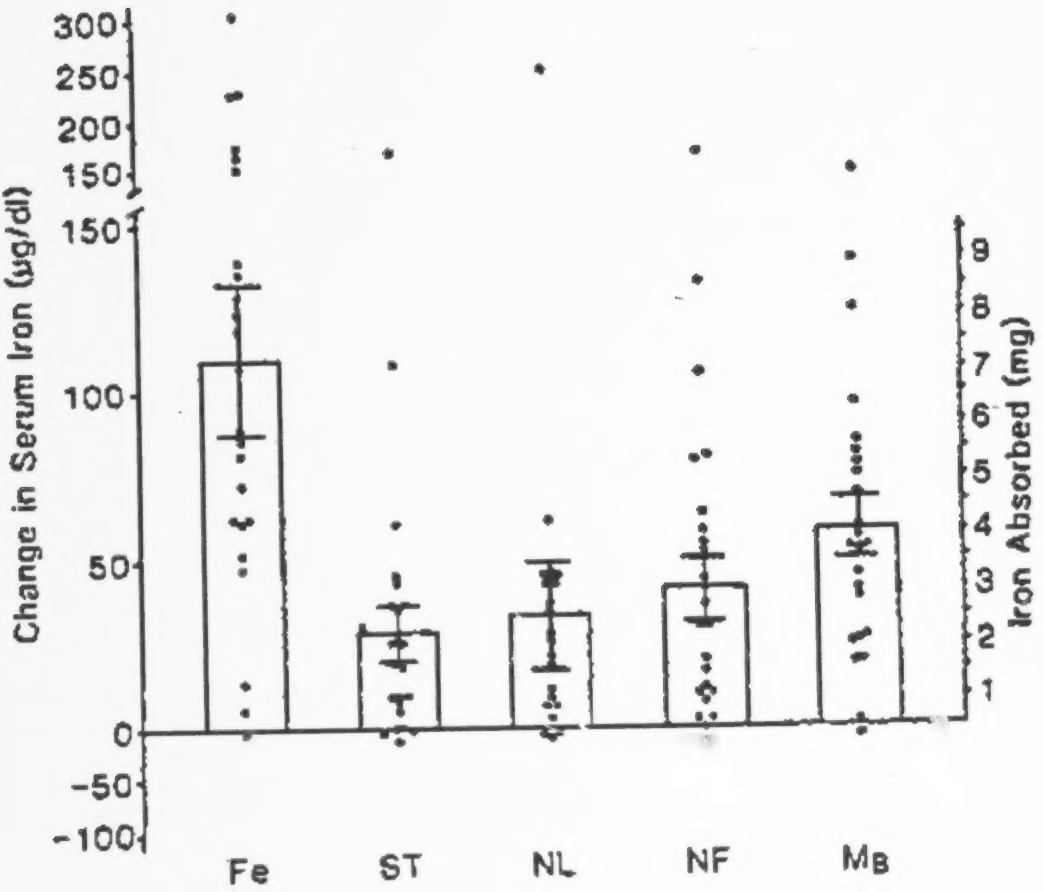

FIGURE 4

FIGURE 4

APPENDIX E

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

THE UNIVERSITY OF COLORADO FOUNDATION, INC., THE UNIVERSITY OF COLORADO, THE REGENTS OF THE UNIVERSITY OF COLORADO, ROBERT H. ALLEN, AND PAUL A. SELIGMAN, PLAINTIFFS-CROSS APPELLANTS,

V.

AMERICAN CYANAMID COMPANY, DEFENDANT-APPELLANT,
AND
LEON ELLENBOGEN, DEFENDANT.

Nos. 97-1468, 98-1113

Nov. 19, 1999
Rehearing Denied Dec. 17, 1999

[196 F.3d 1366]

Before RICH,* RADER, and BRYSON, Circuit Judges.

RADER, Circuit Judge.

The United States District Court for the District of Colorado held American Cyanamid Co. (Cyanamid) liable for fraudulent nondisclosure and unjust enrichment. *University of Colorado Found., Inc. v. American Cyanamid Co.*, 974 F.Supp. 1339, 44 U.S.P.Q.2d 1231 (D.Colo.1997) (*Cyanamid III*). In addition to compensatory damages, the district court awarded Drs. Robert H. Allen and Paul A. Seligman (the Doctors) $1,000,000 in punitive damages.

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* Circuit Judge Rich heard oral argument in this case, but died on June 9, 1999. This case was decided by the remaining judges in accordance with Fed. Cir. Rule 47.11.

The district court also declined to substitute the Doctors as the named inventors on U.S. Patent No. 4,431,634 (the '634 patent) and declined to name the University of Colorado Foundation, Inc., the University of Colorado, and the Regents of the University of Colorado (collectively, the University) as the equitable title holder of that patent. Finally, the district court refused to award damages to the University and the Doctors for infringement of Doctors' copyright in a journal article. Because the district court used an incorrect standard for determining inventorship of the '634 patent, this court vacates the liability judgments against Cyanamid and the other judgments, which rely on the inventorship determination.

I.

Materna 1.60 (Materna) is a prenatal multivitamin/mineral supplement produced and sold by Lederle Laboratories, a division of Cyanamid. In 1981, Cyanamid began selling a reformulation of Materna. The reformulated product improved iron absorption over the previous version of the product. Cyanamid filed a patent application claiming the reformulation. The application named Dr. Leon Ellenbogen, a Cyanamid chemist, as the inventor. The '634 patent issued from this application in 1984.

Reformulated Materna contained, inter alia, 250 mg of calcium carbonate and 25 mg of magnesium oxide per dose. The '634 patent covered a broad range of formulations, as shown by claim 1:

> 1. A method of enhancing the absorption of iron in multimineral, iron-supplement preparations comprising the use of limited quantities of oxides and carbonates of calcium and magnesium administered in said preparations to not more than 300 mg and 75 mg respectively per unit dosage based upon the weight of elemental calcium and magnesium in said oxide and carbonate salts.

'634 patent, col. 5, ll. 42-50.

The Doctors first learned of the '634 patent in 1993. The University and the Doctors then brought suit in federal dis-

trict court against Cyanamid and Dr. Ellenbogen. That lawsuit alleged (1) that the Doctors (who were medical researchers at the University of Colorado Health Sciences Center) invented the reformulation of Materna covered by the '634 patent claims and communicated the invention to Dr. Ellenbogen, (2) that Dr. Ellenbogen intentionally omitted the Doctors as co-inventors in the patent application, and (3) that Cyanamid intentionally hid the patent from the Doctors. The University sought damages for fraudulent nondisclosure, patent infringement, and copyright infringement. The University and the Doctors sought restitution and disgorgement of Cyanamid's profits from sales of reformulated Materna. The University also sought equitable title to the '634 patent and sought to have the Doctors named as **[1370]** the inventors in the '634 patent under 35 U.S.C. § 256 (1994).

In response, Cyanamid asserted that Dr. Ellenbogen hired the Doctors to perform research that convinced Cyanamid to reformulate Materna. According to Cyanamid, the Doctors transmitted the results of their research to Cyanamid with the intention that Cyanamid would reformulate Materna and thereby profit. Cyanamid further asserted that Dr. Ellenbogen was the true inventor. Consequently, Cyanamid argued that it had no duty to notify the Doctors of the patent and denied any liability to the University. As affirmative defenses, Cyanamid asserted that the doctrines of preemption by federal patent law, laches, and limitations under relevant statutes barred the University's claims.

The parties filed cross-motions for summary judgment. The district court granted summary judgment to Cyanamid on the § 256 claim refusing to substitute the Doctors as the named inventors on the '634 patent. *University of Colorado Found., Inc. v. American Cyanamid*, 880 F.Supp. 1387, 1399, 35 U.S.P.Q.2d 1737, 1746 (D.Colo.1995) (*Cyanamid I*). The district court also granted summary judgment to Cyanamid, denying the University's claims of patent infringement and ownership of equitable title to the '634 patent. *See University of Colorado Found., Inc. v. American Cyanamid*

Co., 902 F.Supp. 221, 222-23, 37 U.S.P.Q.2d 1406, 1407-08 (D.Colo.1995) (*Cyanamid II*). The district court also granted summary judgment to the University on copyright infringement. Specifically, the district court found that four bar graphs and a table in the Doctors' published article were copyrightable subject matter and copied by Cyanamid into the patent application. *See Cyanamid I* 880 F.Supp. at 1400-02.

Following a bench trial, the district court found that the Doctors invented the Materna reformulation and that Dr. Ellenbogen was not an inventor of that composition. To determine inventorship, the district court applied state common law, rather than federal patent law. Based on its inventorship finding, the court held Cyanamid liable to the University for both fraudulent nondisclosure and unjust enrichment. *See Cyanamid III*, 974 F.Supp. at 1339.

The district court assessed damages equivalent to a royalty on net sales of reformulated Materna "from the time of the fraud in 1981 through the life of the Patent." Thus, the district court arrived at total damages of $44,396,159. On the fraudulent nondisclosure claim, the court found Cyanamid liable for punitive damages of $500,000 to each of the Doctors. On the copyright claim, the court concluded that Cyanamid did not owe damages to the University. Finally, the court rejected all of Cyanamid's affirmative defenses. *See id.*

Cyanamid appeals the liability judgments on the fraudulent nondisclosure and unjust enrichment claims, the associated monetary awards, and the court's rejection of its statute of limitation and laches defenses. The University appeals the court's denial of its correction of inventorship and equitable patent title claims as well as the denial of damages for copyright infringement.

II.

Summary judgment requires an absence of genuine issues of material fact and a showing that the moving party deserves judgment as a matter of law. *See* Fed.R.Civ.P. 56(c). This court reviews a grant of summary judgment de

novo, with all justifiable factual inferences drawn in favor of the party opposing the motion. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986). This court reviews a bench trial de novo for errors of law, and under the clearly erroneous standard for findings of fact. *See Gjerlov v. Schuyler Labs., Inc.*, 131 F.3d 1016, 1019, 44 U.S.P.Q.2d 1881, 1885 (Fed.Cir.1997).

[1371]A.

Two types of preemption are asserted in this case. First, this court must determine whether federal patent law preempts the University's claims under state law of fraudulent nondisclosure and unjust enrichment. Second, this court must determine whether federal patent law preempts the district court's use of a state common law standard of inventorship to find that the Doctors were the inventors of the Materna reformulation. This court applies its own law to determine whether federal patent law preempts state law. *See Midwest Indus., Inc. v. Karavan Trailers, Inc.*, 175 F.3d 1356, 1360, 50 U.S.P.Q.2d 1672, 1676 (Fed.Cir.1999) (en banc).

"Under the Supremacy Clause, it has been settled that state law that conflicts with federal law is without effect." *Hunter Douglas, Inc. v. Harmonic Design, Inc.*, 153 F.3d 1318, 1331, 47 U.S.P.Q.2d 1769, 1778 (Fed.Cir.1998) (quotations and citations omitted). Field preemption is found when state law regulates conduct in a field that Congress intends the federal government to occupy exclusively. Conflict preemption is found when the application of state law produces a conflict with the requirements, protections, prohibitions, or policies of federal law. *See id.* at 1332.

> A Colorado fraudulent nondisclosure claim requires:
>
> (1) concealment of a material existing fact that in equity and good conscience should be disclosed; (2) knowledge on the part of the party against whom the claim is asserted that such a fact is being concealed; (3) ignorance of that fact on the part of the one from whom the fact is concealed; (4) the inten-

> tion that the concealment be acted upon; and (5) action on the concealment resulting in damages.

Cyanamid III, 974 F.Supp. at 1353. A Colorado unjust enrichment claim requires:

> (1) at plaintiff's expense (2) defendant received a benefit (3) under circumstances that would make it unjust for defendant to retain the benefit without paying.

DCB Constr. Co. v. Central City Dev. Co., 965 P.2d 115, 119-20 (Colo.1998). The fraudulent nondisclosure and unjust enrichment causes of action cover a broad range of conduct that does not bear on federal patent policies, and those causes of action are therefore not preempted by federal patent law. Nor are the state law causes of action preempted as applied in this case, because the two state law causes of action do not impose requirements that are inconsistent with federal law, nor do they "stand[ ] as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress." Hunter Douglas, 153 F.3d at 1332 (quotation and citation omitted).

The University alleged that Cyanamid acted in bad faith in the marketplace by withholding from the Doctors knowledge of the patent application for the Materna reformulation. Similarly, the University alleged that Dr. Ellenbogen and Cyanamid knew that the Doctors invented the Materna reformulation and intentionally omitted them from the application that matured into the '634 patent--a charge that Cyanamid perpetrated fraud on the Patent and Trademark Office (PTO) to obtain the patent.

Significantly, the Doctors made no attempt to patent the Materna reformulation, which they purport to have invented. Although the Doctors had no patent rights to reformulated Materna at the time of the suit, their state law claims are not simply an attempt to enforce property rights. Instead, the fraudulent nondisclosure claim springs from Cyanamid's alleged duty to inform the Doctors of the patent application. Similarly, the unjust enrichment claim springs not from an attempt to enforce intellectual property rights,

but instead from Cyanamid's alleged wrongful **[1372]** use of the Doctors' research results. Therefore, as stated earlier, federal patent law does not preempt these state law claims.

Nonetheless, the University's fraudulent nondisclosure and unjust enrichment claims depend on the Doctors' status as inventors. As the district court correctly noted, "[w]hether Cyanamid had a duty to disclose its intention to and filing of the Patent application depends on who was the inventor of the reformulated version of Materna patented." *Cyanamid I*, 880 F.Supp. at 1395. In determining that the Doctors invented reformulated Materna, however, the district court applied state common law. *See Cyanamid III*, 974 F.Supp. at 1353 n. 2 ("Plaintiffs are not required to establish inventorship or ownership under the patent statute to state a common law claim for fraud or unjust enrichment.... [A] higher level of inventorship or ownership is required to state a claim for patent infringement."). Thus, this court must determine whether federal patent law preempts states from dictating standards for inventorship.

Field preemption describes exclusive regulation of a legal subject by federal law. *See English v. General Elec. Co.*, 496 U.S. 72, 78, 110 S.Ct. 2270, 110 L.Ed.2d 65 (1990). To preempt a field, federal law must evince "a scheme of federal regulation so pervasive" that no room remains for a state to supplement. *Id.* at 79, 110 S.Ct. 2270 Alternatively, federal law preempts a field by addressing a "federal interest ... so dominant that the federal system will be assumed to preclude enforcement of state laws on the same subject." *Id.*

A primary purpose of patent law is to reward invention. *See Kewanee Oil. Co. v. Bicron Corp.*, 416 U.S. 470, 480, 94 S.Ct. 1879, 40 L.Ed.2d 315 (1974). The law of inventorship, which has heretofore developed solely under federal law, supports this purpose by identifying the actual inventors of an invention eligible for patent protection. With its advent in Article 1 of the Constitution, patent law has developed under federal law to achieve the objective of national uniformity. See *Florida Prepaid Postsecondary Educ. Expense Bd. v. College Savings Bank*, 527 U.S. 627, 119 S.Ct.

2199, 144 L.Ed.2d 575, 51 U.S.P.Q.2d 1081, 1088 (1999) ("The need for uniformity in the construction of patent law is undoubtedly important.").

An independent inventorship standard under state law would likely have different requirements and give rise to different remedies than federal patent law. A different state inventorship standard might grant property rights to an individual who would not qualify as an inventor under federal patent law, or might grant greater relief to inventors than is afforded by federal patent law. Either situation might frustrate the dual federal objectives of rewarding inventors and supplying uniform national patent law standards.

The federal Patent Act leaves no room for states to supplement the national standard for inventorship. Title 35 contains explicit and detailed standards for inventorship. *See, e.g.*, 35 U.S.C. § § 101-03, 116- 20, 254-56, 261-62 (1994). Moreover, federal law has provided this court with jurisdiction to enforce these comprehensive provisions to provide a uniform national standard for inventorship. *See In re Snap-On Tools Corp.*, 720 F.2d 654, 655, 220 U.S.P.Q. 8, 9 (Fed.Cir.1983). Therefore, the field of federal patent law preempts any state law that purports to define rights based on inventorship. Consequently, this court vacates the district court's conclusion that the Doctors were the inventors of reformulated Materna and that Dr. Ellenbogen was not the inventor. Upon remand, the court must apply federal patent law principles to determine whether the Doctors and/or Dr. Ellenbogen were inventors of the technology of the '634 patent.

[1373] B.

We set forth above the elements of a fraudulent nondisclosure claim in Colorado. The district court concluded that Cyanamid was liable to the University for fraudulent nondisclosure. The district court found that the Doctors were the inventors of the Materna reformulation. Thus, Cyanamid had an equitable duty to disclose the patent application to the true inventors, the Doctors. Further, the district court found that Cyanamid knew, and the Doctors were un-

aware, of the concealment of the patent filing. The district court found that Cyanamid concealed the application to induce the Doctors to continue to work with Dr. Ellenbogen. Because of this concealment, the district court found, the Doctors did not either seek recognition as inventors on the application or prevent the issuance of the patent with Dr. Ellenbogen named as the inventor. *See Cyanamid III*, 974 F.Supp. at 1353.

The district court's chain of reasoning hinges on the finding that the Doctors were inventors of the Materna reformulation. Because the district court used an incorrect standard to determine inventorship, this court vacates that finding. Therefore, without a correct finding of inventorship, this court must also vacate the district court's finding that Cyanamid had a duty to disclose the filing of the application to the Doctors. Finally, this court vacates the district court's conclusion that Cyanamid was liable to the University for fraudulent nondisclosure for the same reason. These actions necessarily vacate as well the associated damages, punitive damages, and awards.

However, this court notes the following errors in the district court's damages determination. The district court found that Cyanamid's fraudulent nondisclosure "deprived [the University] of financial opportunities and prestige [it] would have enjoyed had their doctors been credited with the invention, and harmed Drs. Allen and Seligman both personally and professionally." *Id.* However, the record shows that the doctors intended to, and did, freely share their research results to allow Cyanamid to make and sell an improved Materna formulation. Neither the doctors nor the University sought to obtain a patent covering the Materna reformulation, and the University has never been in the business of manufacturing or marketing prenatal vitamins. Finally, Cyanamid did not attempt to enforce the '634 patent against the University. Therefore, even assuming that the Doctors were the sole inventors of the Materna reformulation (a fact to be determined upon remand), the only financial opportunity that the University could have lost was the payment for

an assignment of ownership rights in the '634 patent or a license from the University to sell the reformulated product at the time the patent issued.

If the court finds that the Doctors jointly invented the reformulated product with Dr. Ellenbogen, the financial opportunity that the University could have lost was the payment that Cyanamid would have made to secure the Doctors' cooperation in filing the required documents with the PTO, such as oaths and declarations. Because federal patent law allows joint owners to practice a patented technology without accounting to the other co-owners, Cyanamid would not have needed to acquire ownership of the patent or licenses thereunder. *See* 35 U.S.C. § 262 (1994). However, in that case, the University would have been within its rights to license others under the '634 patent or to produce and sell products thereunder. *See id.* Thus, the district court could find that Cyanamid would have also paid the University for either an assignment of the University's ownership interest in the '634 patent or an exclusive license thereunder. Either arrangement would have assured Cyanamid the exclusivity, which they enjoyed during the life of the '634 patent.

By declining to seek a patent in their own right, the Doctors and the University **[1374]** chose to forego the opportunity to gain prestige associated with the inventorship of such a patent. Instead they presumably were satisfied with the prestige associated with publication of a journal article detailing their research. Furthermore, the University submitted no evidence showing that the Doctors suffered any loss of prestige as a result of Dr. Ellenbogen being named as the inventor in the '634 patent. Therefore, the University did not prove that by naming Dr. Ellenbogen as the inventor in the '634 patent, Cyanamid deprived the Doctors or the University of any prestige.

Consequently, even if the Doctors were inventors of reformulated Materna under federal patent law, Cyanamid may be held liable pursuant to the fraudulent nondisclosure claim, but only for the payment that Cyanamid would have made to secure the Doctors' cooperation in filing the re-

quired documents with the PTO, an assignment of ownership rights and/or an exclusive license from the University.

In setting the amount of damages (if any) on remand, the district court should consider the usual and customary arrangements at the time of the filing of the patent application. In particular the court should consider that university licensing barely existed as of the filing date of the '634 patent in 1981. In fact, the Bayh-Dole Act, which set the stage for modern university licensing went into effect less than six months before the '634 patent's filing date. *See* 35 U.S.C. § 200 (1994).

The district court also held Cyanamid liable to the University for unjust enrichment. Cyanamid does not argue that the district court erred in any findings under its unjust enrichment analysis. Therefore, this court does not review those findings. This court notes, however, that a defendant who uses a benefit provided by the plaintiff in an unauthorized and unfair manner may be liable in Colorado for unjust enrichment. *See, e.g., Cablevision of Breckenridge, Inc. v. Tannhauser Condominium Ass'n*, 649 P.2d 1093 (Colo.1982) (en banc) (holding defendant liable for unauthorized use of cable signal, i.e., installing equipment to provide cable service to unsubscribed condominium units). However, as noted before, federal patent law preempts the district court's common law inventorship standard. Like the fraudulent nondisclosure claim, unjust enrichment hinges on the finding that the Doctors invented reformulated Materna. Thus, this court vacates the unjust enrichment liability as well.

C.

The district court granted summary judgment in favor of Cyanamid on the University's request to have the Doctors substituted as the named inventors of the '634 patent under 35 U.S.C. § 256 (1994). The district court concluded that correction of inventorship under § 256 "is not applicable here where Plaintiffs seek correction based on Cyanamid's alleged fraud and deception." *Cyanamid I*, 880 F.Supp. at

1399. However, after the district court's decision in *Cyanamid I*, this court held:

> Section 256 allows deletion of a misjoined inventor whether that error occurred by deception or by innocent mistake. As well, the section allows addition of an unnamed actual inventor, but this error of nonjoinder cannot betray any deceptive intent by that inventor. In other words, the statute allows correction in all misjoinder cases featuring an error and in those nonjoinder cases where the unnamed inventor is free of deceptive intent.

Stark v. Advanced Magnetics, Inc., 119 F.3d 1551, 1555, 43 U.S.P.Q.2d 1321, 1324 (Fed.Cir.1997); *see also Pannu v. Iolab Corp.*, 155 F.3d 1344, 1350, 47 U.S.P.Q.2d 1657, 1662 (Fed.Cir.1998) ("[Section 256] is a savings provision. If a patentee demonstrates that inventorship can be corrected as provided for in section 256, a district court must order correction of the patent, thus saving it from being rendered inval **[1375]** id."). Thus, the district court's premise--that the actual inventors could not be substituted for a fraudulently-named inventor in a patent without thereby invalidating the patent--was incorrect. This court therefore vacates the district court's grant of summary judgment in favor of Cyanamid on the correction of inventorship issue. Upon remand, the district court will have the opportunity to reconsider the University's section 256 claim.

D.

The district court granted summary judgment in favor of Cyanamid on the University's equitable title argument. The court reasoned that the patent would be invalid if the University was the equitable owner of the '634 patent. This conclusion sprang from the district court's belief that the fraudulent deletion from the patent document of the true inventors, i.e., the Doctors, would render the patent invalid. Because no party enjoys any equitable rights in an invalid patent, the district court denied this claim. *See Cyanamid II*, 902 F.Supp. at 222-23 (*citing Kennedy v. Hazelton*, 128 U.S. 667, 9 S.Ct. 202, 32 L.Ed. 576 (1888)).

To the contrary, substitution of the Doctors as named inventors in the '634 patent under 35 U.S.C. § 256, if warranted, would not invalidate the patent and would establish the University's equitable title to it. As noted above, correction of nonjoinder of entitled inventors does not invalidate a patent. Therefore, this court vacates the district court's summary judgment on the University's equitable title claim. Upon remand, the court will have the opportunity to consider the merits of this claim.

E.

The district court found that Cyanamid copied Figures 1-4 and Table 1 of the Doctors' journal article into the patent application. Because these depictions of data in the Figures and Table were protectable expressions under the copyright statute, the district court determined that Cyanamid infringed the Doctors' copyright in the article. *See Cyanamid I*, 880 F.Supp. at 1401-02. However, the district court concluded that the University did not prove any damages from the copyright infringement. *See Cyanamid III*, 974 F.Supp. at 1356-57 ("Plaintiffs are entitled only to those damages and profits attributable to copying the Figures and Table into the patent application, not the reformulation depicted by them. Plaintiffs made no effort at trial to distinguish between damages attributable to the infringement and those attributable to the Patent itself.").

The University argues that its proof of Cyanamid's gross revenues from sales of reformulated Materna shifted the burden of proof to Cyanamid under 17 U.S.C. § 504(b) (1994) to prove deductible expenses and to prove those elements of its profits that were attributable to factors other than copyright infringement.[1] The University's argument

---

[1] 17 U.S.C. § 504(b) (1994) reads as follows:

The copyright owner is entitled to recover the actual damages suffered by him or her as a result of the infringement, and any profits of the infringer that are attributable to the infringement and are not taken into account in computing the actual damages. In establishing the infringer's profits, the copyright owner is required to present proof only of the in-

presumes that the sales of reformulated Materna were due to Cyanamid's copyright infringement. The University had the burden to show this connection. *See* 4 Melville B. Nimmer and David Nimmer, *Nimmer on Copyright* § 14.03[A] (1999) (noting that plaintiff's claims for indirect profits rarely succeed). The district court found that the University did not meet this burden. This court detects no clear error in this finding. This court therefore affirms the district court's decision.

Cyanamid's Affirmative Defenses

Cyanamid appeals the district court's rejection of its statutes of limitations and **[1376]** laches defenses. For the reasons stated in the district court's opinion, Cyanamid's arguments fail.

CONCLUSION

This court vacates the district court's decision that the Doctors, and not Dr. Ellenbogen, invented the reformulation of Materna, and consequently vacates the court's fraudulent nondisclosure and unjust enrichment decisions. Because these liability decisions cannot stand, the damages awards are necessarily also vacated. This court also vacates the district court's summary judgment in favor of Cyanamid on the University's correction of inventorship and equitable patent title claims. Finally, this court affirms the district court's copyright damages and affirmative defense decisions.

COSTS

Each party shall bear its own costs.

AFFIRMED IN PART, VACATED IN PART, AND REMANDED

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fringer's gross revenue, and the infringer is required to prove his or her deductible expenses and the elements of profit attributable to factors other than the copyrighted work.

APPENDIX F

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLORADO.

UNIVERSITY OF COLORADO FOUNDATION, INC., A COLORADO NOT-FOR-PROFIT CORPORATION, THE UNIVERSITY OF COLORADO, AN INSTITUTION OF THE STATE OF COLORADO, THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, A BODY CORPORATE OF THE STATE OF COLORADO, ROBERT H. ALLEN, AN INDIVIDUAL, AND PAUL A. SELIGMAN, AN INDIVIDUAL, PLAINTIFFS,

V.

AMERICAN CYANAMID COMPANY, A MAINE CORPORATION, DEFENDANT.

Civil Action No. 93-K-1657

July 7, 1997
As Corrected July 8, 1997

[974 F. Supp. 1339]

MEMORANDUM DECISION

KANE, Senior District Judge.

This action began in August 1993. Previously published opinions on the parties' cross-motions for summary judgment and on American Cyanamid's motion for reconsideration can be found at 880 F.Supp. 1387, 1995 Copr. L. Dec. ¶ 27,447,99 Ed. Law Rep. 821, 35 U.S.P.Q.2d 1737 (D.Colo.1995) and 902 F.Supp. 221, 105 Ed. Law Rep. 435, 37 U.S.P.Q.2d 1406 (D.Colo.1995).

Trial to the court was held beginning May 2, 1996, and concluded May 24, 1996. On September 18, 1996 the parties filed corrections to their proposed findings of fact and con-

clusions of law submitted before trial. I have reviewed those proposed findings and conclusions as well as the transcript of proceedings, the exhibits admitted at trial, the parties' briefs and the record of the proceedings. What follows are my findings of fact and conclusions of law, as required by Rule 52 of the Federal Rules of Civil Procedure.

I. *JURISDICTION.*

Jurisdiction is uncontested. It is based in part on 28 U.S.C. § § 1331 and 1338(a) because Plaintiffs sought relief under the Patent Act, 35 U.S.C. § 256 and the Copyright Act, 17 U.S.C. § § 101-810, and also on 28 U.S.C. § 1332 because there are common law claims, the case is between citizens of different states and the matter in controversy exceeds the statutory threshold, exclusive of interest and costs.

II. *THE PARTIES.*

Plaintiffs are the University of Colorado, an institution of the State of Colorado created by the Constitution of Colorado (the University) **[1342]** and governed by the Board of Regents, also created by the Constitution of Colorado (the Regents); The University of Colorado Foundation, Inc., a Colorado not- for-profit corporation with its principal place of business in Boulder, Colorado (the Foundation); Robert H. Allen, M.D., a professor of medicine, professor of biochemistry and Director of Hematology at the University of Colorado Health Sciences Center (Dr. Allen); and Paul A. Seligman, M.D., a hematologist and professor of medicine at the University of Colorado Health Sciences Center (Dr. Seligman).

Defendant American Cyanamid Company (Cyanamid) is a Maine Corporation qualified to do business in the State of Colorado.

III. *SUMMARY.*

Plaintiffs allege that Drs. Allen and Seligman performed a number of studies related to the prenatal multivitamin supplement called Materna, which was manufactured and sold by Cyanamid, and that in the course of those studies, Drs. Allen and Seligman invented a reformulation of Ma-

terna and informed Cyanamid of the reformulation. Thereafter, the doctors prepared an article describing their studies and their reformulation invention and furnished Cyanamid a confidential copy of the pre-publication draft of the article. Plaintiffs charge Cyanamid wrongfully copied the article into a patent application and filed the application in its own name without informing Plaintiffs, without naming the doctors as the inventors and naming instead Cyanamid's employee, Leon Ellenbogen, Ph.D. (Dr. Ellenbogen), as the sole inventor. A patent was issued to Cyanamid on February 14, 1984 (the "Patent") and Cyanamid sold the reformulated Materna under that Patent thereafter. Plaintiffs claim Cyanamid exercised its patent rights to prevent others from manufacturing or selling the reformulation and concealed the existence of the Patent from Plaintiffs until they discovered it in or about June 1993.

The Second Amended Complaint set forth eight claims for relief: conversion, fraud, wrongful naming of inventor in violation of 35 U.S.C. § 115, copyright infringement, misappropriation of Plaintiffs' business value, patent infringement, breach of confidentiality obligations and unjust enrichment.

In my decision on the parties' cross-motions for summary judgment issued April 3, 1995, I found Cyanamid was entitled to judgment on the claims for conversion, wrongful naming of inventor, misappropriation and breach of confidentiality obligation, *University of Colorado v. Cyanamid* (Cyanamid I), 880 F.Supp. 1387, 1403-04 (D.Colo.1995), but I declined to rule on Cyanamid's assertion that Plaintiffs' remaining claims were time-barred because the statute of limitations defense hinged on disputed questions of fact. *Id.* at 1406. I granted judgment in favor of Plaintiffs on the claim for copyright infringement, *id.* at 1400-02, and ruled that the remaining three claims would go to trial.

Cyanamid moved for reconsideration of the patent infringement ruling, arguing none of the Plaintiffs could establish themselves as equitable title holders of the Patent entitled to relief. I granted the motion and, upon reconsideration, granted summary judgment in favor of Cyanamid on

the patent infringement claim. *University of Colorado v. Cyanamid* (Cyanamid II), 902 F.Supp. 221, 222-23 (D.Colo.1995).

Thus, two claims remained for trial: the claim for fraud based on failure to disclose the Patent and the claim for unjust enrichment. The question of what damages, if any, were to be awarded Plaintiffs on their copyright infringement claim, was also reserved for trial.

At trial, Cyanamid denied any basis for damages and denied liability on the claims for fraud and unjust enrichment. It argued that neither the University, the Regents nor the Foundation had standing to bring claims because Drs. Allen and Seligman failed to comply with the University Patent Policy and because the doctors' manuscript did not constitute a work for hire. Cyanamid maintained the fraud claim was time-barred under applicable statutes of limitations, and argued the claim for equitable relief was barred by the doctrines of laches, unclean hands and estoppel.

As to the merits of Plaintiffs' claims, Cyanamid argued that its employees were the true inventors of the reformulation; that it is the lawful owner of the Patent, and that the proper inventor was named on the Patent; **[1343]** and denied that any Cyanamid employee made misrepresentations regarding the Patent or its existence or concealed the existence of the Patent from the Plaintiffs. Cyanamid further argued that Plaintiffs failed to apply for a patent within the time limits set by 35 U.S.C. § 102(b) and that Plaintiffs' failure in this regard was not caused, induced or contributed to in any way by Cyanamid.

Other issues are implicit and will be discussed as they arise.

IV. *DISCUSSION.*

A. *Facts.*

Much of the evidence was sharply contested. Some, of course, was not. From the totality of evidence, I make the following findings of fact:

1. *Background.*

Dr. Robert Allen is an internationally recognized hematologist and Director of the Division of Hematology at the Health Sciences Center. He is fifty-nine years old and a graduate of Amherst College with a B.A. in philosophy. He engaged in his pre-medical school studies at the University of California at Berkeley and received his M.D. degree in 1966 from the Washington University School of Medicine in St. Louis, Missouri. After serving an internship, a residency and a fellowship in hematology/oncology he became an assistant and then Associate Professor of Medicine at Washington University. In 1977 he joined the faculty at the Health Sciences Center as a Professor of Medicine and Director of the Division of Hematology, and in 1980 he became a professor of biochemistry as well. He has numerous academic honors, professional awards, memberships and board certifications. His bibliography exceeds one hundred published papers, abstracts and articles and he is the inventor or coinventor of eleven issued patents. Dr. Allen's major scientific interest is cobalamin metabolism and the cellular uptake of macromolecules.

Paul A. Seligman is a fifty-one year old physician and Professor of Medicine at the Health Sciences Center. He received his Bachelor of Science degree from Michigan State University in 1968 and his M.D. degree in 1972 from the State University of New York at Buffalo School of Medicine. Following a residency in internal medicine in 1975, he became a Fellow in Hematology- Oncology at Washington University School of Medicine, St. Louis, Missouri. He completed that fellowship after moving to the University of Colorado School of Medicine where he began as an assistant professor in 1978. He has received numerous honors and elections to prestigious scientific organizations, is a founding member of the American Academy of Hospice Physicians and serves on various faculty committees at the University. He is course director in medicine for junior medical students, director of elective courses for senior medical students and course director for sophomore medical students in hematology and pathophysiology of disease. He is also the Direc-

tor/Preceptor in Hospice Medicine for senior medical students and has authored or co-authored more than 25 original articles and eight book chapters. Dr. Seligman's major scientific interest is in cell surface receptors and the cellular uptake of iron.

Approximately 20% of a Department of Medicine faculty member's salary is paid by the State of Colorado. The professors are expected to generate the remainder through research grants. Most of these grants come from the National Institutes of Health with the expectation that some clinical application of the research will be achieved or eventually developed, and some funds are received from private bequests. In addition, researchers are asked on occasion to conduct tests or research for private organizations. The latter occurred in this case.

Dr. Ellenbogen was the Chief of Nutritional Science at Cyanamid's Lederle Laboratories Division. His duties included clinical and technical management of all nutritionals, hematinics and vitamins. He is a chemist who received a B.S. degree from the City College of New York, 1949, an M.S. from New York University in 1951, and his Ph.D. from Indiana University in 1954. Dr. Ellenbogen has served since 1978 as an Adjunct Professor of Nutrition at the Cornell University Medical College, and is named as the inventor on the Patent, as well as on ten other patents.

[1344] *2. The Friendship.*

While he was a research fellow, Dr. Allen first learned of Dr. Ellenbogen and his work through an article in the Journal of Biological Chemistry and contacted Dr. Ellenbogen by telephone to purchase a starting material (hog stomach powder) for his work in progress. Shortly thereafter, in 1972, the two met at an American Hematology Society gathering and a professional relationship developed based on their mutual interest in vitamin B12 research. Dr. Ellenbogen had changed the focus of his research, but wished to be kept apprised in the field in which Dr. Allen continued to be directly engaged. Because the two shared a

common interest but were not competing, the relationship was mutually beneficial.

Dr. Ellenbogen wanted to keep current in the B12 field because he reviewed articles on the subject and requested Dr. Allen to provide him with prepublication copies of manuscripts Dr. Allen wrote. Dr. Ellenbogen agreed to treat these manuscripts in a confidential manner and not disseminate them without Dr. Allen's consent. From that time on, the two engaged in telephone conversations, correspondence and personal visits at professional meetings.

The nature of their relationship was an intellectual exchange stimulated by Dr. Allen sending manuscripts and other academic products such as lecture slides to Dr. Ellenbogen, who in turn supplied Dr. Allen with the material (hog stomach powder) required for his research. This alliance was strengthened in 1975 when Dr. Ellenbogen wrote Dr. Allen asking him to meet Dr. Ellenbogen's son who was applying to medical schools and, if Dr. Allen thought it appropriate, to write a letter of recommendation to the Washington University School of Medicine's admissions committee. Dr. Allen agreed, found the young man to be an outstanding candidate, and was pleased to serve as a reference for him.

From 1972 to 1977 the relationship between the two scientists developed to the point that Dr. Ellenbogen would describe certain problems existing at Lederle to Dr. Allen with complete confidence that he would keep them confidential and Dr. Allen would describe his latest research techniques and activities without worrying that Dr. Ellenbogen would appropriate them for his own use.

In 1977 Dr. Ellenbogen received a new title at Lederle relating to professional services. In this capacity, he became a scientific advisor who provided technical assistance to the company's marketing efforts with respect to vitamins and other nutritional products. In January 1978 Dr. Ellenbogen contacted Dr. Allen with reference to a vitamin B12 absorption problem experienced by patients with pernicious anemia. Dr. Allen agreed to undertake *in vitro* assays of samples of intrinsic factor, a purified substance derived from

hog stomach powder, to correlate the test results with *in vivo* tests by a Florida physician of a patient suffering from pernicious anemia. The desired result was to replace *in vivo* testing with Dr. Allen's laboratory methods. i.e., *in vitro* testing. Dr. Allen conducted the assays and sent the results to Dr. Ellenbogen. Although no fee had been established for these tests before they were undertaken, Lederle sent Dr. Allen a $500 honorarium that he deposited in a research account at the University.

The intellectual exchange continued as Dr. Allen sent Dr. Ellenbogen copies of prepublication manuscripts and Dr. Ellenbogen sent prepublication copies of his reviews to Dr. Allen. The reviews received by Dr. Allen always dealt with intrinsic factor and transcobalamins, the proteins that bind vitamin B12 to different tissues in the body. Dr. Ellenbogen continued to send intrinsic factor samples to Dr. Allen who performed assays on them and Lederle paid accordingly. Through the University, Dr. Allen instituted a patent application for his invention of the assay procedure. He and Dr. Ellenbogen discussed the University's patent procedures and Dr. Allen provided Dr. Ellenbogen with copies of the data he had filed with the University in connection with the application.

3. The Problem.

In early 1979 Dr. Ellenbogen called Dr. Allen as part of their continuing dialogue on intrinsic factor, *in vitro* analysis and review articles. During the conversation, Dr. Ellenbogen mentioned for the first time that Lederle had a very important prenatal vitamin compound called Materna. Dr. Allen had no **[1345]** familiarity with the product though he was aware of the medical significance of prenatal vitamins.

Dr. Ellenbogen advised Dr. Allen that Stuart Pharmaceuticals was Lederle's major competitor in the prenatal vitamin market through its product, "Stuartnatal," with each company commanding 40 to 45% of the market. He told Dr. Allen that the salespeople for Stuart Pharmaceuticals when making detail calls on physicians had been advising them that Materna was an inferior product because the iron in

Materna could not be absorbed by the patient as well as iron in Stuartnatal.

This was so, it was said, because the calcium in Materna was calcium carbonate whereas Stuartnatal contained calcium sulfate. When Materna was absorbed in the stomach, it was alleged, the carbonate would dissociate from the calcium and the fumarate (a negative ion with the iron) would dissociate resulting in a complex that would precipitate, removing the iron from the solution so that it could not be absorbed.

Dr. Ellenbogen discounted the claim as theoretical, but he was trying to find a way to test and compare iron absorption from Materna and Stuartnatal to deflate Stuart's sales pitch. Dr. Allen advised that the gold standard was to incorporate a radioactive isotope of iron into a product administered to a test subject and then measure the radioactive count either in the body to determine the amount absorbed, or in the feces to determine the amount that had not been absorbed which was then subtracted from the amount administered to account for the amount absorbed. This technique, however, was not satisfactory for a number of reasons not the least of which was the risk inherent in exposing humans to radioactive isotopes.

Dr. Allen informed Dr. Ellenbogen of a 1976 article in the *Scandinavian Journal of Hematology* titled "Iron Absorption Studies" by Dr. Gunnar Ekenved which described a very high correlation between serum iron increase following ingestion and the amount of radioactive iron absorbed using the gold standard technique. Dr. Allen advised Dr. Ellenbogen that the serum iron technique to quantify iron absorption based on the Ekenved studies could be used to determine the accuracy of Stuart Pharmaceutical's claim.

Dr. Allen had learned of the Ekenved studies shortly after their publication when he was reading extensively in the field of iron absorption and hemochromatosis. At trial, Dr. Ellenbogen testified that he, too, knew of the Ekenved studies before Dr. Allen mentioned them in the early 1979 telephone conversation, but I find his testimony in this regard, as well as others, not credible.

4. The Studies.

Within a fortnight of their first telephone conversation regarding Materna, Dr. Allen and Dr. Ellenbogen spoke again. The two scientists agreed the iron absorption studies method could be used to test the relative absorption qualities of Materna and Stuartnatal without having to use radioactive iron. They discussed in detail how the study could be done and Dr. Ellenbogen said he had $5,000 in his budget to pay for the study. Although Dr. Allen said additional testing could be done to determine total iron binding capacity, Dr. Ellenbogen advised he was interested only in determining whether Materna provided the same iron absorption as Stuartnatal. He thought both products delivered adequate amounts of iron for prenatal subjects and didn't think there would be any significant difference between the two products. Accordingly, he wasn't interested in determining the milligrams of iron absorbed. Because the tests were limited to a comparison of the two products, Dr. Allen's recommendations to test for iron alone and to use a placebo were dropped. It was agreed that 16 normal females of childbearing age would be the subjects of the study.

When they agreed on how a study would be done, Dr. Allen had not thought he would be the person conducting the study and when asked by Dr. Ellenbogen, he told him he would be unavailable due to other commitments. Dr. Ellenbogen then said he actually had a total of $10,000 in his budget for the study and that it was customary in the pharmaceutical industry to determine what the clinical studies would cost and then double that figure with the second half going to the investigator as an additional incentive. Dr. Ellenbogen said he trusted Dr. Allen's work **[1346]** and urged him to perform the study. These factors, coupled with the fact that the tests were of scientific interest because they had never been done on prenatal vitamins, persuaded Dr. Allen to do the study.

Dr. Allen told Dr. Ellenbogen about Dr. Seligman, his colleague on the faculty whose special area of interest was iron, and said he would ask Dr. Seligman to assist. Dr. El-

lenbogen agreed to draw up the protocol and Drs. Allen and Seligman to conduct the study.

When Dr. Ellenbogen called Dr. Allen and read his proposed protocol to him, Dr. Allen found the proposal unacceptable and dictated to Dr. Ellenbogen background information on the carbonate theory and how calcium carbonate might interfere with iron absorption, the details of how the subjects would be selected, the number and manner of obtaining the blood samples and how the iron would be assayed. Dr. Allen felt awkward dictating these changes and believed this conversation created a strain on his otherwise friendly relationship with Dr. Ellenbogen. In due course Dr. Ellenbogen mailed the revised protocol to Dr. Allen for written comment, however, and Dr. Allen replied that it was excellent.

Following University rules, Dr. Allen obtained clearance to conduct the tests from the Human Studies Committee. In July 1979 Dr. Ellenbogen sent a check for $5,000 made payable to Dr. Allen who did not cash it, but requested and received a new check which was payable in like amount to the Division of Hematology and deposited in its general account. This was the first half of the $10,000 to be paid for the contemplated single study. (Study I).

Dr. Ellenbogen made a pre-test visit to Denver to inspect the facilities and meet the personnel who would be involved in the study. "Sponsors," he stated, "must *always* do that to satisfy what is called good clinical practices that the FDA requires." (Emphasis added). Dr. Allen and his wife hosted a dinner party for Dr. Ellenbogen at their home after which Dr. Ellenbogen wrote a gracious appreciation letter for the hospitality extended to him and the two scientists continued their professional friendship discussing, among other topics, the iron absorption studies, intrinsic factor and vitamin B12 analogues.

Contrary to the expectations of Drs. Allen and Seligman that iron absorption from Materna would be worse than that obtained from Stuartnatal and Dr. Ellenbogen's expectation that absorption from both would be about the same and ac-

ceptable in either, the Study I results showed poor absorption from both products. While this result satisfied Lederle's marketing concerns because it deflated Stuart's sales pitch that Materna was inferior to Stuartnatal, it caused Drs. Allen and Seligman grave concern that pregnant women who used either product would not obtain the necessary iron for which the medication was prescribed. Therefore, they immediately recommended to Dr. Ellenbogen that a follow-up study be conducted to measure the absorption from a simple iron compound (ferrous fumarate), to establish a baseline for comparison against the Study I results.

Dr. Allen followed the Human Studies Committee's approval process and prepared another Subject Consent Form for the new study (hereafter, Study IA) Neither Dr. Ellenbogen nor anyone else at Cyanamid participated in preparing a protocol for Study IA, nor did Cyanamid send a check in payment as it did before Study I commenced. Dr. Ellenbogen did not make a visit before the study began. Drs. Allen and Seligman completed Study IA in September 1979 and Dr. Allen sent the results of Study IA to Dr. Ellenbogen. I find Study IA was undertaken and completed by Plaintiffs entirely independently of Cyanamid.

Study IA showed satisfactory absorption from the iron compound alone, validating Study I's conclusion that there was poor iron absorption from both Materna and Stuartnatal. After receiving the results of Study IA Dr. Ellenbogen initiated steps to obtain a grant of $5,000 which was awarded to Plaintiffs. At the conclusion of Study IA, although Cyanamid had noticed that Materna did not yield good iron absorption, it did not know the reasons therefor and Cyanamid did not inform physicians or the public about the results of either Studies I and IA. Moreover, Cyanamid, at that time, had no plan, theory **[1347]** or formula to reformulate Materna to achieve improved iron absorption so as to approximate the amount of iron contained in its product.

In a letter to Dr. Allen dated October 5, 1979, Dr. Ellenbogen wrote, "I hope your studies are progressing well and we get some good clear results on the cause of reduced iron

absorption." Dr. Ellenbogen did not recall whether he had any plan to do further studies on iron absorption after receiving the results of Study IA and did not believe that magnesium oxide and calcium carbonate would inhibit iron absorption.

Entirely independent of Cyanamid, Drs. Allen and Seligman devised a study to determine the reasons for the poor iron absorption of both Materna and Stuartnatal (hereafter Study II). Stuart's theory that calcium carbonate interfered with iron absorption because carbonate combined with the iron to form ferrous carbonate could explain the inadequate absorption of Materna, but it could not explain the inadequacy of Stuartnatal which had no carbonate in it. Both products, however, contained magnesium oxide. Therefore, Drs. Allen and Seligman designed Study II to determine whether both calcium carbonate and magnesium oxide interfered with iron absorption. They suspected the interference was caused by a combination of calcium and magnesium salts. As was the case with Study IA, Dr. Ellenbogen did not make a prestudy visit. With necessary University clearances, Drs. Allen and Seligman performed Study II in October and November 1979.

On December 4, 1979 Dr. Allen wrote to Dr. Ellenbogen and advised him of the results of Study II. The letter bears quotation:

> I believe that the results strongly indicate that magnesium oxide ... and calcium carbonate all decrease iron absorption in humans.... Based on the studies that we have performed to date, I believe that iron absorption from prenatal capsules could be increased markedly if calcium sulfate were used in place of calcium carbonate, if the amount of magnesium oxide was reduced or omitted entirely....

Even at this point there is no credible indication that Cyanamid had any reformulation of Materna in mind.

Although Study II established that both calcium carbonate and magnesium oxide interfered with iron absorption, the point at which the effect begins to occur was not

determined. Therefore, from February 8 through 19, 1980, Drs. Allen and Seligman conducted Study IIA. This study was performed without a protocol from Cyanamid, without a prestudy visit by Dr. Ellenbogen and without any payment from Cyanamid in advance of the study.

In a March 4, 1980 letter Dr. Allen advised Dr. Ellenbogen of the results of Study IIA, which is the essence of the invention in question. The letter states:

> As we discussed, I believe that the next step would be for Lederle to reformulate their [sic] Materna preparation such that it contains 200 mg of calcium in the form of calcium carbonate and 25 mg of magnesium in the form of magnesium sulfate or magnesium oxide.... would expect that the absorption of iron from the new Materna would be similar to that of iron alone.

Two weeks after this letter, Dr. Ellenbogen prepared and sent a protocol for the already completed study to Dr. Allen. Cyanamid's in-house patent attorney Dr. Robert Raymond, who drafted the Patent, acknowledged the reformulation set forth in the foregoing letter is within the scope of the Patent later filed by Cyanamid. I find by clear and convincing evidence that the reformulation was the invention of Drs. Allen and Seligman and was communicated by Dr. Allen to Dr. Ellenbogen. I reject Dr. Ellenbogen's testimony to the contrary as not credible.

Dr. Ellenbogen thereafter asked Dr. Allen to perform another study (Study III) to measure iron absorption (1) from Stuartnatal, (2) from a formulation essentially the same as proposed by Dr. Allen (except that it included 250 rather than 200 mg. of calcium carbonate, but still within the scope of the Patent), and (3) from a formulation having 350 mg. of calcium carbonate. Each of the three formulations contained 25 mg. of magnesium oxide as recommended by Dr. Allen. Study III was performed in October 1980.

Cyanamid furnished a protocol for Study III and made a grant of $5,000 per composition for a total of $15,000. For the first time **[1348]** since Study I, Dr. Ellenbogen made a

prestudy visit to the Health Sciences Center. As predicted by Dr. Allen, Study III disclosed enhanced iron absorption from the 250 mg. formulation and poor iron absorption from the formulation containing 350 mg. of calcium carbonate.

The next study, in March 1981 (Study IV), compared the reformulation of Materna with Stuartnatal and several other competing products and revealed iron absorption from the reformulated Materna was enhanced just as Dr. Allen said it would be from essentially the same reformulation he had disclosed to Dr. Ellenbogen and recommended in his March 4, 1980 letter. For Study IV Dr. Ellenbogen made what he had proclaimed to be the obligatory prestudy visit to the Health Sciences Center to satisfy good clinical practices. Cyanamid paid $5,000 per composition for a total of $30,000 and Cyanamid furnished a protocol in advance of the study.

5. The Publications.

As part of their academic regimen Drs. Allen and Seligman prepared an article for publication in a medical journal describing their studies and the results thereof (the "Article"). The first draft was completed in 1981 after Studies I through IV were completed. Consistent with academic custom, Drs. Allen and Seligman named themselves and their laboratory assistants who participated in the studies as co-authors. They did not name or consider Dr. Ellenbogen a co- author. This draft was submitted on July 27, 1981 to *The New England Journal of Medicine.* (On this side of the Atlantic, at least, it is the *ne plus ultra* of medical journals. Dr. Allen had already published articles in it.)

In keeping with their relationship, Dr. Allen sent Dr. Ellenbogen a copy of the Article on a confidential basis. Dr. Ellenbogen had no comments or suggestions for changes on the draft submitted to the *New England Journal of Medicine.*

The New England Journal declined to publish the Article. Drs. Allen and Seligman made minor changes in the draft and sent it to the *Journal of Obstetrics and Gynecology,* which published it in its March 1983 issue under the title "Measurements of Iron Absorption from Prenatal Multi-

vitamin-Mineral Supplements" Before publication, Dr. Allen sent a copy to Dr. Ellenbogen.

As is typical with professional journals of the sort described, the *Journal of Obstetrics and Gynecology* wrote to Dr. Allen accepting the Article for publication. The letter advised, "that prior publication of any portion of this article, including tables, figures or graphs, in other scientific journals or news media will void this publication agreement." Dr. Allen sent a copy of this letter to Dr. Ellenbogen. Later, Dr. Ellenbogen asked Dr. Allen for permission to order reprints of the published Article. I conclude based on the foregoing and the established relationship that Dr. Ellenbogen knew the Article, intended for *The New England Journal of Medicine*,--and specifically the tables, figures and graphs it contained--was confidential and that he was not to copy it in whole or in part or reveal any part of it without the express prior approval of Dr. Allen.

The focal point of scientific interest in the Article was Table I, which tabulated the results of Studies I, IA, II, III and IV. Table I presents the results of the studies in a distinctive format with four main columns, nine sub-columns and 12 rows. The results of these studies are presented in graph form in four figures.

6. The Patent.

Shortly after he received from Dr. Allen the draft of the Article submitted to *The New England Journal of Medicine*, Dr. Ellenbogen contacted Cyanamid's in-house patent department. Within weeks, the patent process was aweigh. The patent application copied information from the Article, replicated Table I and traced its four Figures.

The Cyanamid in-house patent counsel who prepared and filed the patent application, Dr. Raymond, knew that the studies were performed by Drs. Allen and Seligman. Dr. Ellenbogen, however, told Dr. Raymond that the role of Drs. Allen and Seligman was merely technical and either told, or led Dr. Raymond to believe, that it was he, Dr. Ellenbogen, who designed the Studies, that Cyanamid had paid Drs. Allen and Seligman for their work on all of the Studies and that

Dr. Allen was merely performing tests on materials provided to him under protocols [1349] prepared by Dr. Ellenbogen. This understanding of Dr. Raymond was flatly incorrect. Moreover, had Dr. Raymond been advised of the true facts, he would not have listed Dr. Ellenbogen as the inventor on the patent application as he did.

In August 1981 Dr. Ellenbogen filled out a Cyanamid company form called a "Record of Invention." This form contained a line for insertion of the date of conception of the invention. Cyanamid's internal document control policy provides that a Record of Invention form must be maintained in two separate places for the "*life* of the company." (emphasis in original.) The record of invention form completed by Dr. Ellenbogen is missing from both places where it was to be maintained and no copy has been located anywhere else. Dr. Ellenbogen testified that he does not remember the date he entered for the date of conception on the form.

On October 14, 1981 Cyanamid held a press conference and issued press releases describing the studies conducted by Drs. Allen and Seligman and announcing the reformulation of Materna. Dr. Allen attended the press conference and presented the studies and reformulation, but was not informed by anyone connected with Cyanamid that the company was preparing and intended to file a patent application on his and Dr. Seligman's invention.

The patent application was filed with the federal Patent and Trade Office on or about December 21, 1981, listing Dr. Ellenbogen as the sole inventor and containing Dr. Ellenbogen's oath stating he was the inventor. The Patent issued as U.S. Patent No. 4,431,634 in February 1984. Shortly thereafter Cyanamid gave Dr. Ellenbogen an award for being the inventor. Contrary to the established routines of their friendship, Dr. Ellenbogen did not advise Dr. Allen of his award, the issuance of the Patent or his listing on the ap-

plication as the inventor. Dr. Allen did not learn about the Patent until June 1993.[1]

7. The Continuing Relationship.

In October 1982 at a meeting in San Francisco of the International Society of Obstetrics and Gynecology, Dr. Seligman made an oral presentation accompanied by posters. Dr. Ellenbogen attended the event and he and Dr. Seligman had a series of conversations. On the second night of the meeting, they went to Chinatown for dinner. Dr. Seligman complained that he was bored and wished Dr. Allen had told him how long he would need to stay at the meeting. Dr. Ellenbogen criticized Dr. Allen by saying he had helped Dr. Allen on a number of occasions and complaining, "It would have been nice if he could have helped me out. I should have been on the manuscript." Dr. Seligman replied, "It sounds like you've got some issues with Bob (Dr. Allen), and you should just give him a call." Dr. Ellenbogen mentioned that he had some patents and that Dr. Allen wasn't the only one who knew about patents. Dr. Ellenbogen, however, did not mention the Materna patent to Dr. Seligman.

By a letter dated October 5, 1984, Dr. Ellenbogen told Dr. Allen Cyanamid wanted to conduct a comparison study of iron absorption from reformulated Materna with that from Pramilet FA, a competing product. Pramilet included, *inter alia*, 250 mg. of calcium in the form of calcium carbonate and 10 mg. of magnesium in the form of magnesium oxide, having been so formulated since as early as 1979. Dr. Ellenbogen said he hoped to draft the protocol for the study in the near future and suggested it would be helpful if Dr. Allen could receive approval from the University before Dr. Ellenbogen forwarded the protocol.

Dr. Allen signed the Human Subject Committee form for the Pramilet study on November 7, 1984 and the University granted its approval on November 16, 1984. Dr. Ellen-

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[1] On October 21, 1981, Dr. Ellenbogen told Dr. Allen about an entirely different patent, but not the one at issue in this case.

bogen sent the protocol for the Pramilet study to Dr. Allen on December 13, 1984 and Dr. Allen signed and returned it on December 28, 1984. Cyanamid paid a total of $15,000 for this study, half of it ($7,500) in January 1985.

On January 14, 1985 Cyanamid shipped bottles of Pramilet and Materna to Dr. Allen for his use in the Pramilet study. The labels on those bottles were covered with another **[1350]** label marked *"FOR INVESTIGATIONAL USE ONLY"* so that the patent notice was masked. The results of the Pramilet study were sent to Cyanamid on February 26, 1985, and the University received final payment on May 22, 1985.

8. The Discovery.

In June 1993 Dr. Seligman received a letter from Barbara D'Alonzo, Senior Coordinator of Special Projects, Marketing Services Department of Wyeth-Ayerst Laboratories requesting permission to use and purchase reprints of the article, "Measurements of Iron Absorption from Prenatal Multivitamin-Mineral Supplements" which had appeared in the 1983 issue of *Obstetrics & Gynecology*. She indicated Wyeth-Ayerst intended to use the reprints for informing its sales representatives and its Medical and Medical Communications departments. She requested Dr. Seligman to send her a letter addressed to the editor of *Obstetrics & Gynecology* giving Wyeth-Ayerst copyright permission so it could be included in the purchase order.

At Dr. Allen's suggestion Dr. Seligman contacted Dr. Ellenbogen to see if he could tell them why Wyeth-Ayerst would want such a letter and what that company was doing in the area of prenatal vitamins. Dr. Seligman faxed the letter to Dr. Ellenbogen and a few days later Dr. Ellenbogen called Dr. Seligman and told him Wyeth-Ayerst had acquired Stuartnatal. Dr. Ellenbogen recapitulated his surprise and concern that people at Wyeth-Ayerst "would be looking at your manuscript." He said, "I can't imagine what they want to do with it, if it's Stuartnatal, but I was concerned about something that might be related to Materna, and we've got a patent on that." Dr. Seligman describes this

statement as being followed by a brief, pregnant pause and Dr. Ellenbogen immediately changing the subject to their families. Dr. Seligman remembers the conversation vividly because at that time he and his wife were expecting their third child and were gravely concerned about the possibilities of the child being born with Down's Syndrome. Shortly afterward, Dr. Seligman told Dr. Allen that Dr. Ellenbogen had mentioned something unusual about a patent related to the manuscript. Dr. Seligman's comprehension had been distracted by the change of subject to the impending birth. He said to Dr. Allen, "I don't know if Materna was used, but it was something. He was worried, but he's not worried anymore, and it was Stuartnatal." Dr. Allen then checked into the existence of a patent, learned there indeed was one and ordered a copy of it. When the Patent was received and examined by Drs. Allen and Seligman, they were both shocked to learn that the figures in the Patent had been lifted, indeed traced, from their *New England Journal* manuscript. Dr. Seligman exclaimed, "What a sleaze!" I find in this recounting, and in all other respects, that Dr. Seligman is a completely credible and persuasive witness.

No one connected with Cyanamid ever mentioned to Dr. Allen, Dr. Seligman or the other Plaintiffs the unauthorized use of the data and table in the Article, the prosecution of the Patent, the preparation and filing of an affidavit in support of the patentability of the invention averring that Dr. Ellenbogen instigated and supervised all the Studies, the issuance of the Patent, the award to Dr. Ellenbogen for being named as inventor on the Patent, or the six civil actions asserting the Patent brought by Cyanamid against generic drug companies.

9. The Benefits.

After the Patent issued, Cyanamid brought six patent infringement actions against generic drug manufacturers. Each case settled by a stipulated injunction prohibiting further infringement of the Patent. As a result, Cyanamid had no generic competition from 1984 to the filing of this case.

The other name brand prenatal vitamin did have generic drug company competition.

In 1980 University Patents, Inc. had a contract with the. University of Colorado to license University inventions to third parties so the University would receive royalties. In that year, University Patents wrote to Dr. Ellenbogen requesting Cyanamid to execute a Confidential Disclosure Agreement so University Patents could disclose another of Dr. Allen's inventions to Cyanamid. That Confidential Disclosure Agreement stated the invention being disclosed belonged to the University and that University Patents was the University's "technology transfer manager".

[1351] Dr. Raymond reviewed the Confidential Disclosure Agreement for Cyanamid. In August 1981 University Patents sent another letter to Dr. Ellenbogen enclosing a copy of a patent application on one of Dr. Allen's inventions and stating that the disclosure was made pursuant to the previously described Confidential Disclosure Agreement. The first written communication between Dr. Ellenbogen and Dr. Raymond concerning patenting the Materna reformulation occurred three days after that letter.

10. The University and its Patent Policy.

On December 15, 1977 the Regents approved the "Text Of A Revised Policy On Patents" (the "Policy"). This Policy called for the establishment of a patent committee for the University, which was charged to suggest to the President of the University commercial potentials of discoveries and "make recommendations as to whether such discoveries might be patentable, licensable and/or otherwise commercially developable."

The Policy required the President of the University, "upon recommendation of the Patent Committee," to designate a patent officer to be responsible for the day-to-day administration of the Policy. The patent officer was authorized to take certain steps in connection with the commercial exploitation of discoveries in which the University had an interest. The Policy is not a self-executing assignment of rights from an inventor to the University or its designee.

Rather, each "included person" becomes obligated to assign any and all rights to the University when that person is aware of the need to do so.

Under the Policy, the term "included persons" refers to "all faculty members, fellows and staff employees" and the term "discoveries in which the University has an interest" includes "discoveries made while performing duties required by a third-party grant or contract and/or made with the use of University facilities and/or made as a result of the use of funds supplies [sic] or administered by the University."

Drs. Allen and Seligman were and remain "included persons" subject to the Policy at all relevant times. Because Drs. Allen and Seligman invented the Materna reformulation, it is a "discovery in which the University has an interest." The doctors were and are required under the Policy to file a written report "within a reasonable time after the discovery is made and no later than its submission for publication." The University considers this reporting obligation a matter of critical importance. The University's publication, "A Guide to the Law of Patents for Scholars" states "[p]ublication of research results can proceed on a normal basis and patent rights can be preserved if the investigator submits a disclosure of his or her invention in a timely manner."

Neither Dr. Allen nor Dr. Seligman submitted the written disclosure mandated by the Policy. It is obvious why the doctors did not comply with their employer's policy in this instance, when Dr. Allen had with respect to other inventions: whilst Drs. Allen and Seligman are the inventors, it did not occur to them to take action independent of Cyanamid to determine whether their invention was patentable. When, however, the doctors discovered that Cyanamid had obtained a patent for the reformulation without naming them as the inventors, they did take immediate action which was entirely consistent with the Policy.

The University bases its interest in the invention on rights granted to it under the Policy. Dr. Ellenbogen, Dr. Raymond and thus Cyanamid were well- advised of the Pol-

icy. There is no controversy between the University and the doctors that would redound to the benefit of Cyanamid. The pivotal fact is that Dr. Ellenbogen claimed credit with his employer for an invention which was not his. Dr. Raymond prepared and filed the patent application not knowing that Drs. Allen and Seligman were the inventors. Perforce, this litigation would not have ensued.

On July 31, 1985 the Regents and the Foundation executed a servicing agreement by which the University assigned to the Foundation "its entire right, title and interest in and to all rights to inventions, discoveries and other intellectual property in which it has an interest." The agreement also provided for the establishment of a University Committee on Intellectual Property to replace the Patent Committee specified in the Policy. The effect of the servicing agreement **[1352]** was to transfer from the University to the Foundation any rights or interests it might acquire to inventions.

On August 1, 1993 the Foundation and University Patents executed a Recovery- Sharing Agreement by which University Patents assigned to the Foundation "any and all rights and claims it may have to [the Patent] ... and against Lederle or any other third party regarding such patent or the invention covered by such patent." In return, the Foundation agreed to pay to University Patents 18.2% of all amounts collected as a result of the claims against Cyanamid if this action settled after commencement of the trial. University Patents agreed to cooperate with Plaintiffs.

The purpose of the Recovery-Sharing Agreement was to resolve any claims University Patents may have had as a result of the invention made, but not reported, during the pendency of the 1976 Servicing Agreement. After this action was filed, the doctors also assigned their rights to the invention to the Foundation.

11. The Damages.

Plaintiffs claim Cyanamid's fraud cost them the opportunity to benefit financially from the reformulation. According to Plaintiffs, a conservative approach to measuring their

damages under their copyright, fraud and unjust enrichment theories is the value of the reasonable royalty they would have negotiated for an assignment or the exclusive licensing of the Patent to Cyanamid had they known of the patent application. To that amount would be added that portion of Cyanamid's profits that Plaintiffs would have received but for Cyanamid's fraud.

The evidence relating to damages under Plaintiffs' theories of relief is scant. There was no evidence attempting to quantify Cyanamid's profits or to distinguish among those profits attributable to the Patent, the copyright infringement, or otherwise, nor was any accounting performed or requested. Instead, the evidence regarding damages focused almost exclusively on the reasonable royalty Plaintiffs claim they would have negotiated with Cyanamid had they known of the plans to patent the reformulation.

Plaintiffs' expert testified that a reasonable royalty in the pharmaceutical industry during the relevant time period would have been 10% of Cyanamid's net sales of Materna, with an additional 1% to 2% of net sales if the license were exclusive and contained no initial payment. The expert relied on data summarized in several charts showing Materna's net sales from 1982 through 1995, projections of sales through the life of the Patent assuming proper patent enforcement and marketing of the Patent, and reasonable royalty fees based on those figures. The chart detailing Plaintiffs' actual damages, assuming a 12% royalty rate on Cyanamid's aggregate sales and an 8% statutory interest rate, is replicated in its entirety as Appendix 1 to this decision. The chart shows an aggregate amount of actual damages accrued through the life of the Patent to be $44,396,159. Cyanamid offered no evidence to dispute or contravene the expert's testimony or the sales figures upon which he relied, and I find them credible.

B. Conclusions of Law.

Applying these findings of fact to the applicable legal standards as I interpret them, I reach the following conclusions of law:

1. Standing.

Cyanamid contends the University, the Regents and the Foundation lack standing to assert their claims for fraud and unjust enrichment because Drs. Allen and Seligman did not assign their purported rights to the invention to the University as required by the Policy. Cyanamid relies on *Arachnid, Inc. v. Merit Indus., Inc.*, 939 F.2d 1574 (Fed.Cir.1991), a patent case in which plaintiff was deemed to lack standing to sue for an infringement that occurred before plaintiff had obtained legal title to the patent under an agreement it executed with a consultant inventor. The *Arachnid* court found the agreement, which provided that any inventions conceived during the consultancy would be the property of plaintiff and "will be assigned" by the consultant to plaintiff, was merely "an agreement to assign" and did not, by itself, transfer patent rights to the plaintiff. *id.* at 1576, 1580.

Borrowing the *Arachnid* analysis, Cyanamid contends Plaintiffs lack standing to pursue their claims because Drs. Allen and Seligman did not comply with the Policy to **[1353]** assign their rights to their reformulation studies to the University until after this lawsuit was filed. I find *Arachnid* inapplicable and conclude the University, the Regents and the Foundation have standing to pursue common law claims against Cyanamid.

The standing requirement for a patent infringement claim is significantly higher than the standing necessary to state a claim under common law. This is because a patent gives an inventor greater rights to make, use or sell the invention than does the mere act of invention. *Arachnid*, 939 F.2d at 1578. The act of invention vests the inventor with a common law right to make, use or sell his invention while a patent vests the inventor with "the right to *exclude others*" from doing so. *Id.* (emphasis original). To enforce the greater patent right, "a plaintiff must necessarily have standing as comprehended by the patent statute." *Id.* at 1579.

No claim for patent infringement remains. Any assertion that the University, the Regents or the Foundation

must prove standing "as comprehended by the patent statute" to perfect a common law claim for relief against Cyanamid is contrary to *Arachnid* and is rejected.

2. Fraud.

Plaintiffs assert Cyanamid is liable under a theory of fraudulent nondisclosure for concealing the existence of the Materna patent and depriving them of the money they would have received had they been given the opportunity to use their reformulation invention commercially. Under Colorado law, the elements of a claim for fraudulent nondisclosure are: (1) concealment of a material existing fact that in equity and good conscience should be disclosed; (2) knowledge on the part of the party against whom the claim is asserted that such a fact is being concealed; (3) ignorance of that fact on the part of the one from whom the fact is concealed; (4) the intention that the concealment be acted upon; and (5) action on the concealment resulting in damages. *Kopeikin v. Merchants Mtg. & Trust Corp.*, 679 P.2d 599, 601 (Colo.1984) (en banc) (restating standard articulated in leading case of *Morrison v. Goodspeed*, 100 Colo. 470, 68 P.2d 458 (1937)).

I have already found that Dr. Ellenbogen did not invent the Materna reformulation and that the true inventors were Drs. Allen and Seligman.[2] Given the long-standing friendship between Dr. Ellenbogen and Dr. Allen, and the confi-

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[2] Both sides spent significant time in their briefs and arguments debating the question of who invented the reformulation at issue as that term is defined in the patent statute. As I explain in the section of this opinion dealing with Cyanamid's affirmative defenses, Plaintiffs are not required to establish inventorship or ownership under the patent statute to state a common law claim for fraud or unjust: enrichment. As set forth above, a higher level of inventorship or ownership is required to state a claim for patent infringement. We are no longer concerned in this case with inventorship for the purposes of the Patent Act, as Plaintiffs' claim for infringement has been denied as a matter of law. We are concerned with the act of invention itself and the common law right to make, use or sell the invention that flows from it. I have determined that the act of inventorship in this case was that of the doctors, not Dr. Ellenbogen.

dential working relationship between Cyanamid and the University doctors, the filing of the patent application was a material fact that in equity and good conscience should have been disclosed. This is so regardless of who was named as the inventor: the fact that Dr. Ellenbogen was named only underscores the fraudulent nature of the nondisclosure, perhaps explaining the motivation behind it.

I find Dr. Ellenbogen deliberately concealed the application so that lie could continue the beneficial relationship with Dr. Allen, while retaining for Cyanamid the financial and competitive benefits of the doctors' reformulation idea and for himself recognition and reward from his employer. Drs. Allen and Seligman acted on this concealment by continuing to work for and benefit Cyanamid, unaware that their idea had been appropriated and Cyanamid was attempting to exclude them and others from being able to use it in the future. They acted on the concealment by failing to seek to have their names included in the application or to prevent the issuance of the Patent in Dr. Ellenbogen's name. The concealment deprived the University and the Foundation of financial opportunities and prestige they would have enjoyed had their doctors been credited with the invention, and harmed Drs. Allen and Seligman both personally and professionally.

[1354] The doctors' failure to discover the fraud or to act to prevent or redress it was a result of the fraud itself and was justified under the circumstances. It was not attributable to any lack of diligence on their part or on the part of the University.

Cyanamid is liable for its own misconduct and is vicariously liable for that of Dr. Ellenbogen. Dr. Ellenbogen was acting at all times relevant to Plaintiffs' claims on Cyanamid's behalf and with its apparent authority. *See Grease Monkey Int'l, Inc. v. Montoya*, 904 P.2d 468, 473 (Colo.1995) (en banc) (citing Restatement (Second) of Agency § 257). Drs. Allen and Seligman, the University and the Foundation were injured as a result of this fraud and are entitled to relief.

3. Unjust Enrichment.

Cyanamid argues the claim for unjust enrichment must fail because Plaintiffs neither desired nor expected to be compensated for the Studies or for Cyanamid's use of the Studies to produce and market a reformulated Materna product. According to Cyanamid, Drs. Allen and Seligman shared the results of the Studies freely, encouraged Cyanamid to market the reformulated Materna product and sought no financial compensation in connection with its commercial distribution. Under such circumstances, Cyanamid asserts "any benefit realized by Cyanamid from such commercialization, whether from the sale of the reformulated product, the issuance of the Patent or otherwise, cannot serve as the basis for a claim of unjust enrichment." Def.'s Trial Br. at 49 (emphasis added). I disagree.

Cyanamid misapprehends the nature of the unjust enrichment claim. The benefit at issue was not the use of the doctors' Studies and reformulation to make and market a reformulated Materna product. Rather, the benefit was the use of the doctors' Studies to claim credit for inventing the reformulation and to obtain a patent on it. The Patent allowed Cyanamid to assume ownership of the reformulation and to obtain monopoly profits by excluding others, including the doctors, from using or sharing it again.

So understood, the doctors' expectation of compensation (or lack thereof) for Cyanamid's pre-Patent use of the reformulation itself is immaterial. That the doctors did not expect to be paid for the reformulation's pre-Patent use does not mean they consented to Cyanamid's appropriation of their idea or are without a remedy for the very different benefits conferred.

To the extent the benefit at issue is the Patent, Cyanamid asserts Cyanamid could not have conferred such a benefit on it because only the Patent and Trade Office has authority to issue patents. Further, and because the Patent and Trade Office can only issue patents in favor of the true inventor, the "sole consequence" of any ruling that Drs. Allen and Seligman were the true inventors "would be the in-

validation of the Cyanamid patent," not a claim for unjust enrichment. See Def.'s Trial Br. at 53-54. Cyanamid's arguments harken to the protruded tongues of playground taunts and are utterly unpersuasive. Such casuistry ignores the venerable role of equity in our courts and the nature of a claim for unjust enrichment.

Unjust enrichment is an equitable doctrine that permits recovery when a plaintiff shows "' (1) that a benefit was conferred on the defendant by the plaintiff, (2) that the benefit was appreciated by the defendant, and (3) that the benefit was accepted by the defendant under such circumstances that it would be inequitable for it to be retained without payment.' " *Ninth Dist. Prod. Credit Ass'n v. Ed Duggan, Inc.*, 821 P.2d 788, 795 (Colo.1991) (en banc) (quoting *Cablevision of Breckenridge v. Tannhauser Condominium Ass'n*, 649 P.2d 1093, 1096-97 (Colo.1982)). The scope of the remedy for unjust enrichment is broad, centering attention " 'on the prevention of injustice.'" Id. (quoting Palmer, Law of Restitution § 1.1 (1978)).

I conclude that a benefit was conferred on Cyanamid by Plaintiffs and that Cyanamid appreciated this benefit. Cyanamid used the Studies to obtain a patent on the doctors' original idea for the reformulation and deliberately concealed its actions. The Patent allowed Cyanamid to exclude generic manufacturers from the prenatal vitamin market and to obtain a higher price for its product than it could have without it. "A **[1355]** person confers a benefit upon another if he ... in any way adds to the other's security or advantage." Restatement of Restitution § 1, comm. b (1937). The definition of benefit contained in the Restatement is broad, *Cablevision*, 649 P.2d at 1097, and includes the profits and other advantages Cyanamid gained by patenting Plaintiffs' invention.[3]

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[3] Cyanamid contends there is no legal basis for awarding Plaintiffs any share of Cyanamid's post-Patent profits. Cyanamid asserts it began selling reformulated Materna before it obtained the Patent and did not need the Patent to continue doing so. Because it would have generated

The circumstances under which Cyanamid obtained this advantage make it inequitable for Cyanamid to continue enjoying it without compensating Plaintiffs.

4. Cyanamid's Affirmative Defenses.

Cyanamid asserts a panoply of affirmative defenses to Plaintiffs' claims, each of which I find unpersuasive.

Cyanamid asserts the claims of Drs. Allen and Seligman are barred by statutes of limitations, and that the claim for unjust enrichment is also barred by the equitable doctrine of laches. I reject both assertions based on my finding that the failure of Drs. Allen and Seligman to file their claims within the applicable limitations periods was the result of the very conduct for which relief is sought, namely the fraudulent concealment of the fact of the patent application and the naming of Dr. Ellenbogen as the reformulation's inventor.

Cyanamid is prohibited from invoking the doctors' reliance on its fraud to raise a procedural bar to a claim seeking a remedy for the fraud itself. Doing so would allow Cyanamid to benefit from its own misconduct in violation of established Colorado law. *See, e.g., Rosane v. Senger*, 112 Colo. 363, 149 P.2d 372, 375 (1944) (articulating common law concept that a wrongdoer should not be able to take advantage of his own wrong), *applied in Smith v. Boyett*, 908 P.2d 508, 512 (Colo.1995) (en banc); *First Interstate Bank v. Piper Aircraft Corp.*, 744 P.2d 1197, 1200 (Colo.1987) (recognizing fraudulent concealment as basis for tolling statutes of limitation)

The defense of laches is rejected under the analogous equitable doctrine of unclean hands.

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its profits even without the Patent, Cyanamid concludes Plaintiffs are not entitled to any share of them.

The argument is unpersuasive. Clearly Cyanamid perceived a benefit to patenting the reformulation or it would not have incurred the time and expense to do so. Among the benefits, Cyanamid was able to exclude generic drug companies from competition.

I also reject Cyanamid's defense based on Rule 12(b)(6) that Plaintiffs cannot prove they suffered harm as a result of Cyanamid's conduct. Cyanamid contends Plaintiffs are precluded from establishing this necessary element of their fraud and unjust enrichment claims because Drs. Allen and Seligman (1) "neither desired nor expected to benefit financially" from the invention and, instead, (2) "inten[ded] for all manufacturers of prenatal multivitamin supplements to use the invention free of charge." Pretrial Order (Statement of Claims and Defenses), p. 4. Again, these statements do not support a conclusion that Plaintiffs were not harmed by Cyanamid's simultaneous covert actions of claiming credit for the invention and securing for itself the exclusive right to market and profit from it.

As explained in *Arachnid*, a patent enlarges the " 'natural' right" of an inventor "to make, use and sell [his] invention" by "adding to it the *right to exclude others* from making, using or selling the patented invention." 939 F.2d at 1578 (emphasis original). When Cyanamid patented the reformulation, it secured for itself the exclusive right to make, use and sell, and therefore to profit from, it. Once this was accomplished, the doctors' original intent to share their invention and to forego any financial benefit from it was thwarted and cannot be used to defeat a claim based on the later, or then undiscovered, misconduct.

Cyanamid thwarted the doctors' original intent through fraud under circumstances where retention of the benefits of such fraud would be unjust. Therefore, it cannot now point to this original intent to argue the doctors were not harmed by Cyanamid's intervening misconduct. Doing so is akin to **[1356]** denying the victim of theft a remedy because the item stolen was originally intended as a gift for someone else.

Finally, Cyanamid contends Plaintiffs' claims are preempted by the Supremacy Clause of the United States Constitution because they are an attempt to obtain patent remedies in the absence of a patent. Quoting *Darling v. Standard Alaska Prod. Co.*, 818 P.2d 677 (Alaska 1991), *cert. denied*, 502 U.S. 1097, 112 S.Ct. 1176, 117 L.Ed.2d 421 (1992),

Cyanamid asserts the "enforcement of [Plaintiffs'] unjust enrichment claim would clearly hamper free exploitation of ideas which are in the public domain, without affecting the existing incentives inventors have for disclosure." Def's Trial Br. at p. 62.

The distinction between the instant case and *Darling* is obvious. In *Darling*, the defendants copied samples of an invention that plaintiff sold to them in an arms-length transaction after plaintiff had unsuccessfully sought to patent the invention. Finding the invention to have been in the public domain at the time it was copied, the *Darling* court determined "[d]efendants received nothing more than that which they were legally entitled to use [and] were not unjustly enriched." 818 P.2d at 679 n. 4. Under these circumstances, plaintiff was seeking in equity that which he could not obtain under the patent laws, namely, the royalty or profit to which he would have been entitled had his attempt to patent his invention been successful. Accordingly, his claim was preempted under the Supremacy Clause.

In the instant case, by contrast, Cyanamid did much more than simply use and market an idea that was in the public domain: Cyanamid patented it. Relying on stealth and deception to claim credit for the reformulation, Cyanamid obtained a patent to exclude others from using the reformulation and to secure for itself monopoly profits for its manufacture and sale. In doing so, it removed the reformulation from the free marketplace of ideas in direct contravention of the wishes of those who invented it. This is categorically different from defendant's conduct in *Darling*, which had no effect on the ability of others to copy and use an invention that remained, after defendants' use, in the free marketplace of ideas.

The facts that the Patent was obtained, and that Cyanamid used fraud in obtaining it, distinguish this case from *Darling* and render the Supremacy Clause inapplicable.

5. Damages--Copyright Infringement.

I have already determined on summary judgment that Plaintiffs have satisfied the requisite elements of their copyright cause of action as a matter of law. In *Cyanamid I*, 880 F.Supp. at 1403, *mot. recons. denied*, *Cyanamid II*, 902 F.Supp. at 224, I found Figures 1-4 and Table 1 of the Article constituted copyrightable subject matter entitled to protection, and determined Cyanamid unlawfully copied the Figures and Table into its patent application. *Cyanamid I* at 1402. Left for resolution at trial, however, was the question of whether Plaintiffs could show damages related to the infringement.

The copyright Act provides that the copyright owner is entitled to recover both "the actual damages" suffered as a result of the infringement "and any profits of the infringer that are attributable to the infringement and are not taken into account in computing the actual damages." 17 U.S.C. § 504(a)(1). According to the legislative history, damages are awarded to compensate the copyright owner for losses from the infringement and profits are awarded to prevent the infringer from unfairly benefiting from a wrongful act. See Notes of Committee on the Judiciary, H.R. No. 94-1476 (set forth in the Historical and Statutory Notes at 17 U.S.C.S. § 504).

As actual damages for Cyanamid's copyright infringement, Plaintiffs seek an amount equal to what they "would have agreed to as a fair price for licensing the reformulation to Defendant." Pls.' Trial Br. on Damages, p. 4. In addition, and even in the absence of any actual damages, Plaintiffs claim they are entitled to those post-Patent profits of Cyanamid attributable to the infringement. *Id.*, p. 5.

Plaintiffs' damages theory is problematic in the copyright context because it is the depiction of data, not the data itself, that is protected by the Act. Accordingly, Plaintiffs are entitled only to those damages and profits attributable to copying the Figures and Table into the patent application, not the reformulation depicted by them. Plaintiffs made no effort at trial to distinguish between **[1357]** damages attrib-

utable to the infringement and those attributable to the Patent itself.

Given this failure, and the fact Plaintiffs did not elect to recover an award of statutory damages under 17 U.S.C. § 504(c), I decline to award them either damages or profits under the Copyright Act. In doing so, I note the Act's stated purpose of "prevent[ing] the infringer from unfairly benefiting from a wrongful act" should be realized in this case through the award of damages for Plaintiffs' common law claims of fraud and unjust enrichment.

6. Damages--Fraud and Unjust Enrichment.

I have determined that Cyanamid is liable to Plaintiffs both for fraud and for unjust enrichment. Devising an appropriate remedy based on the evidence presented at trial, however, has proved problematic. The difficulty stems from the conflict between the law of tort and of restitution, and the continuing debate on whether both legal and equitable relief is available for a single set of wrongs.

While I offer some observations on this conflict below, I conclude the dilemma is of little practical importance in this case. Plaintiffs' theory of damages is the same under both claims: Plaintiffs claim they were damaged by the amount they would have been able to obtain from Cyanamid as a reasonable royalty or licensing fee and Cyanamid was benefitted by its misconduct in the same amount. Although Plaintiffs purport to seek a share of Cyanamid's profits in the form of a disgorgement, they have offered no evidence as to what those profits, or their share of them, might be.

a. Fraud

With respect to Plaintiffs' claim for fraud, I have already determined that Cyanamid copied the doctors' idea for the reformulation into their patent application; misrepresented that it was Dr. Ellenbogen, not the doctors, who invented the reformulation; concealed the application and the misrepresentation from the doctors and the University; and then concealed the fact that it had obtained and was enforc-

ing exclusive rights to the idea. In short, Cyanamid defrauded the doctors of their idea, making that idea its own.

That idea, regardless of the doctors' original intent to give it away for free, belonged to them and their employer and had valued. The loss of this value is an element of actual damage for which Plaintiffs are entitled to be compensated.

The only evidence presented at trial attempting to quantify this loss was Plaintiffs' tables and expert testimony projecting Cyanamid's net sales of reformulated Materna through the life of the Patent and identifying the reasonable royalty Plaintiffs could have expected had they assigned or transferred exclusive rights to the reformulation to Cyanamid. Cyanamid offered no evidence to dispute the sales figures or the royalty calculations, and I accept them as fact.

I find Plaintiffs' reasonable royalty calculation--figured as a 12% share of Cyanamid's annual Materna sales through the life of the Patent--to be an appropriate measure of the stolen idea's value.

In addition to these actual damages for Cyanamid's fraud, I find Drs. Allen and Seligman are individually entitled to an award of punitive damages. Dr. Ellenbogen and Cyanamid betrayed the doctors' trust and exploited their work for pecuniary gain. Although we will never know the complete scope of the effect this had on the doctors' careers and life paths, I find beyond a reasonable doubt that Cyanamid's actions were "attended by circumstances of fraud, malice, or willful and wanton conduct" such that: Drs. Allen and Seligman are entitled to an award of reasonable punitive damages pursuant to Colo.Rev.Stat. § 13-21-102(1)(a).

In awarding exemplary damages to Drs. Allen and Seligman, I am perforce drawing a distinction between them and the institutional plaintiffs. The University and the Foundation have an interest in the doctors' invention and this interest was unequivocally known to Cyanamid. Indeed the Policy was specifically brought to Cyanamid's attention just three days before Dr. Ellenbogen contacted Dr. Raymond about patenting the Materna reformulation.

Under Colorado law, a trier of fact, whether judge or jury, is vested with the discretion to allow or deny exemplary **[1358]** damages. *Sanders v. Knapp*, 674 P.2d 385, 388 (Colo.App.1983). I am mindful that exemplary damages are not intended to compensate an injured plaintiff, but to punish the defendant and to deter others from similar conduct. *Leidholt v. District Court*, 619 P.2d 768, 770 (Colo.1980). Moreover, Colorado courts have observed that the statute authorizing the award of exemplary damages reflects the General Assembly's intent to require a minimum degree of civility so that recourse to more violent methods is not taken by its defrauded citizens. *Mailloux v. Bradley*, 643 P.2d 797, 799 (Colo.App.1982).

It is fair game to be outsmarted in a business transaction, but not to be defrauded. The law marks the boundaries between the two; one is fair and the other is foul. Not every case entitling a plaintiff to actual damages for fraud, however, entitles one to an award of exemplary damages. The statute is aimed at the circumstances surrounding or attendant upon the fraud. In this case those circumstances relate directly to the rights of the doctors whereas the rights of the institutional plaintiffs are essentially derivative.

Cyanamid is a leviathan in an industry that depends upon scientific research. Its employee, Dr. Ellenbogen, is a scientist himself. Every scientist knows that imagination, insight and invention are at the very heart of this endeavor and must be respected if research is to survive at all. The imagination, insight and invention in this case were manifested by Dr. Allen and Dr. Seligman.

Cyanamid wantonly disregarded the integrity of the doctors' research--not just through Dr. Ellenbogen's deception and clandestine conduct, but through Cyanamid's failure to establish procedures to prevent such exploitation and to enforce the meager measures it had in place. Cyanamid's indifference and its consequent injury to the fragile nature of the creative process in scientific research cannot go unnoticed or unpunished.

There is no matrix for exemplary damages, nor do they have a defined, precise relationship to actual damages. In determining the amount of exemplary damages to be awarded Dr. Allen and Dr. Seligman, I am not basing that award on the enormity of the actual damage sustained by all Plaintiffs nor the relationship of the doctors to the other plaintiffs. Rather, I base it on Cyanamid's cynical disregard of these doctors as scientists. Its only concern in initiating the research on prenatal vitamins was to deflate the puff of a competitor. On the contrary, these physicians were dedicated to solving a problem that constituted a serious threat to the health of pregnant women so dedicated that they continued the research on their own. When Cyanamid recognized the profit that could be made, it pillaged the doctors' invention as so much booty. This conduct is not merely a question of stepping over the line; it is a departure from the game itself. The amount of the reasonable punitive damages awarded each is $500,000.

b. Unjust Enrichment

The scope of the remedy for unjust enrichment "is broad, cutting across both contract and tort law, with its application guided by the underlying principle of avoiding the unjust enrichment of one party at the expense of another." *Cablevision*, 649 P.2d at 1097 (citing 1 G. Palmer, The Law of Restitution § 1.1 (1978) and 66 Am.Jur.2d Restitution and Implied Contracts § 11). Simply applying the principle of unjust enrichment to the facts presented, I have concluded that the benefits realized by Cyanamid include Cyanamid's post-Patent profits attributable to the Patent, as well as any other industry or market advantages Cyanamid gained as a result of having the Patent. To prevent the injustice that would result if Cyanamid were permitted to retain these ill-gotten gains, the law of restitution would require me to order Cyanamid to disgorge them.

However, my earlier determination that Plaintiffs are entitled to an award of damages for fraud gives rise to the dilemma to which I alluded above: Where a plaintiff is awarded damages to compensate him for a loss but the loss

is different from the benefit received by defendant, must the defendant also disgorge that benefit?

In general, civil law organizes and conceptualizes wrongs in terms of the harms they cause the plaintiff rather than the benefits they generate for the defendant, seeking to **[1359]** remedy wrongs by compensating for injuries rather than requiring the wrongdoer to give up the benefits of his misdeed. The law of restitution, and in particular the principle of unjust enrichment, is an exception to this general rule. *See* C. Wonnell, *Replacing the Unitary Principle of Unjust Enrichment*, 45 Emory L.J. 153 (Winter 1996); N. McBride & P. McGrath, The *Nature of Restitution*, 15 Oxford J. Legal Stud. 33, 44-45 (1995).

Intellectual property law provides precedent for awarding both harm-based and benefits-based remedies. As set forth above, for example, a plaintiff may recover both damages under the Copyright Act to compensate him for his loss and profits to prevent the infringer from unfairly benefiting from his wrongful act. 17 U.S.C. § 504(b). Some courts and scholars urge a similar approach to the damages provisions of the Patent Act, *see Note, Unjust Enrichment for Patent Infringement: a Novel Idea?*, 4 J. Intell. Prop. L. 123 (Fall 1996); *c.f.*, E. Allan Farnsworth, *Your Loss or My Gain? The Dilemma of the Disgorgement Principle in Breach of Contract*, 94 Yale L.J. 1339 (1985) (eloquent discussion of the relative utility and nonutility of benefit- based approach to remedies in law of contracts), and the principle "straddles the line between the law of torts and restitution" as well. *Wonnell, supra*, at 167 (where defendant intentionally takes the property of another under circumstances in which one could have paid a competitive market price for the property, defendant is liable for harm caused unless the benefit received by defendant is greater, in which case defendant is liable for benefit). *See also Engel v. Engel*, 902 P.2d 442, 445 (Colo.App.1995) (where the benefit to defendant and loss to plaintiff do not coincide such that defendant has received benefit while plaintiff has suffered no loss, defendant must

disgorge amount he has been enriched, citing Restatement of Restitution § 1, comment e).

However, fundamental to each of these remedial schemes is the principle that a plaintiff cannot recover twice for the same injury. In the copyright context, a plaintiff can only recover those profits of the infringer "not taken into account in computing the actual damages." 17 U.S.C. §504(b). Similarly, a plaintiff should be entitled to the benefits gained through a defendant's misconduct only if those benefits are greater than the plaintiff's losses. In that case, it is well settled that the plaintiff can "waive the tort and sue in assumpsit" for the enrichment. *Wonnell, supra,* at 167-68.

While Plaintiffs in the instant case suggest the benefits to Cyanamid are greater than their loss, they have offered no evidence to support it. Rather, the evidence suggests Plaintiffs loss and Cyanamid's gain coincide: Plaintiffs were damaged in the amount of the reasonable royalty or licensing fee they should have received for their idea and Cyanamid benefitted in that same amount by not having to pay. Under these circumstances, there is no basis upon which to award Plaintiffs a share of Cyanamid's post-Patent profits over and above the 1981 value of the stolen idea.

V. *CONCLUSION.*

I find Cyanamid liable to Plaintiffs under each of the two remaining claims for relief in this case. Cyanamid's fraud and concealment robbed Plaintiffs of their valuable idea and allowed Cyanamid to obtain profits and market advantages justice precludes it from retaining. However, because Plaintiffs' only attempt to quantify Cyanamid's profits was with the same evidence used to establish their actual damages for fraud, I decline to order disgorgement or otherwise award Plaintiffs a share of Cyanamid's post-Patent profits.

I find Cyanamid's conduct to have been attended by circumstances of fraud beyond a reasonable doubt such that Drs. Allen and Seligman are entitled to an award of punitive

damages in a reasonable amount I have determined to be $500,000 each. Accordingly,

IT IS ORDERED that judgment shall enter in favor of Plaintiffs and against Cyanamid on Plaintiffs' claims for fraud and unjust enrichment in the amount of $44,396,159, **[1360]** which is 12% of the aggregate actual and projected net sales of the reformulated Materna prenatal vitamin from the time of the fraud in 1981 through the life of the Patent, assuming an annual statutory interest rate of 8%.

IT IS FURTHER ORDERED that Cyanamid pay to Drs. Allen and Seligman $500,000 each in punitive damages pursuant to Colo.Rev.Stat. § 13-21-102(1)(a).

IT IS FURTHER ORDERED that no damages are awarded to Plaintiffs for Cyanamid's copyright infringement.

IT IS FURTHER ORDERED that Plaintiffs shall have judgment for their costs herein expended.

Appendix 1

1982 - 2001 ACTUAL DAMAGES ASSUMING A REASONABLE ROYALTY RATE AS TESTIFIED TO BY EXPERT AND PROPER PATENT ENFORCEMENT AND MARKETING FOR LIFE OF PATENT

	NET SALES	ROYALTY FEES @ 12%	STATUTORY INTEREST @ 8%	PRESENT VALUE	CUMMULATIVE DAMAGE AMOUNT
1982	9,000,000	1,080,000			1,080,000
1983	11,600,000	1,392,000	86,400		2,558,400
1984	11,200,000	1,344,000	204,672		4,107,072
1985	12,100,000	1,452,000	328,566		5,887,638
1986	11,900,000	1,428,000	471,011		7,786,649
1987	12,100,000	1,452,000	622,932		9,861,581
1988	13,700,000	1,644,000	788,926		12,294,507
1989	15,417,000	1,850,040	983,561		15,128,108
1990	15,800,000	1,896,000	1,210,249		18,234,356
1991	13,000,000	1,560,000	1,458,749		21,253,105
1992	13,001,000	1,560,120	1,700,248		24,513,473
1993	13,001,000	1,560,120	1,961,078		28,034,671
1994	13,001,000	1,560,120	2,242,774		31,837,565
1995	13,001,000	1,560,120	2,547,005		35,944,690
1996	13,001,000	1,560,120		1,514,680	37,459,370
1997	13,001,000	1,560,120		1,470,563	38,929,932
1998	13,001,000	1,560,120		1,427,731	40,929,932
1999	13,001,000	1,560,120		1,386,146	41,743,810
2000	13,001,000	1,560,120		1,345,773	43,089,583
2001	13,001,000	1,560,120		1,306,576	44,396,159

APPENDIX G

UNITED STATESDISTRICT COURT
FOR THE DISTRICT OF COLORADO

THE UNIVERSITY OF COLORADO FOUNDATION, INC., A COLORADO NOT-FOR-PROFIT CORPORATION, THE UNIVERSITY OF COLORADO, AN INSTITUTION OF THE STATE OF COLORADO, THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, A BODY CORPORATE OF THE STATE OF COLORADO, ROBERT H. ALLEN, AN INDIVIDUAL, AND PAUL A. SELIGMAN, AN INDIVIDUAL, PLAINTIFFS,

V.

AMERICAN CYANAMID, A MAINE CORPORATION, DEFENDANT.

Civ. A. No. 93-K-1657

Oct. 26, 1995

[902 F. Supp. 221]

ORDER ON MOTION FOR RECONSIDERATION

KANE, Senior District Judge.

In this action, The University of Colorado Foundation, Inc. ("Foundation"), The University of Colorado ("University"), The Regents of the University of Colorado ("Regents"), Robert H. Allen and Paul A. Seligman (collectively "Plaintiffs") allege Defendant American Cyanamid Company ("Cyanamid") wrongfully filed and obtained a patent on a reformulated prescription prenatal vitamin called "Materna."

In its second amended complaint, Plaintiffs claimed relief for (1) conversion, (2) fraud, (3) wrongful naming of inventor, (4) copyright infringement, (5) misappropriation, (6) patent infringement, (7) breach of confidentiality obligation, and (8) unjust enrichment.

[222] In my April 3, 1995 memorandum opinion and order ("Order"), *inter alia*, I granted Plaintiffs' motion for summary judgment and denied that of Cyanamid on the cause of action for copyright infringement; granted Cyanamid's motion for summary judgment on the causes of action for conversion, wrongful naming of inventor, misappropriation and breach of confidentiality obligation but denied that motion as concerns the causes of action for fraud, patent infringement and unjust enrichment.

The case now presents on Cyanamid's motion for reconsideration of the Order with regard to my grant of summary judgment to Plaintiffs on the copyright claim and my denial of summary judgment to Cyanamid on the patent infringement, fraud and unjust enrichment claims. Alternatively, Cyanamid requests me to amend the opinion to state it involves controlling questions of law as to certain issues and to certify such amended opinion to the United States Court of Appeals for the Federal Circuit pursuant to 28 U.S.C. § 1292(b). I grant the motion insofar as it requests reconsideration with regard to the patent infringement claim but deny it in all other aspects.

The relevant facts are set out in the Order reported in *The University of Colorado Foundation, Inc. v. American Cyanamid Co.*, 880 F.Supp. 1387, 1390-92 (D.Colo.1995).

I. *Motion for Reconsideration.*

"A motion for reconsideration is proper when the court has 'made a mistake not of reasoning but of apprehension ... [or] if there has been a significant change or development in the law or facts since submission.'" *FDIC v. Hildenbrand*, 892 F.Supp. 1317, 1319-20 (1995) (quoting *EEOC v. Foothills Title Guar. Co.*, 1991 WL 61012 at *3 (D.Colo. Apr. 12, 1991), *aff'd*, 956 F.2d 277 (10th Cir.1992)).

> When a court enunciates a rule of law in the course of a given case, the law of the case doctrine generally requires the court to adhere to the rule throughout the proceedings.... Courts have generally permitted a modification of the law of the case

> when substantially different, new evidence has been introduced, subsequent, contradictory controlling authority exists, or the original order is clearly erroneous.

Major v. Benton, 647 F.2d 110, 112 (10th Cir.1981) (citations omitted).

A. *Patent Infringement Claim.*

Cyanamid asks me to reconsider the Order denying its summary judgment motion on the patent infringement claim. The Order stated although Plaintiffs could not succeed in a claim for damages under the Patent Act because they did not have legal title as contemplated by the Act, Cyanamid had not shown as a matter of law the Plaintiffs could not establish themselves as equitable title holders of the patent entitled to equitable relief. *University of Colorado Foundation, Inc.*, 880 F.Supp. at 1397.

Cyanamid argues, assuming the facts alleged by Plaintiffs to be true, Cyanamid's patent covering the Materna reformulation would necessarily be invalid. It asserts *Kennedy v. Hazelton*, 128 U.S. 667, 9 S.Ct. 202, 32 L.Ed. 576 (1888), precludes Plaintiffs' claim for equitable infringement because there the Court held there can be neither equitable nor legal rights in an invalid patent.

Cyanamid maintains this case is distinguishable from *Arachnid, Inc. v. Merit Indus., Inc.*, 939 F.2d 1574 (Fed.Cir.1991), referred to in the Order. There, it was undisputed that the actual inventors obtained title to the patent at issue and the plaintiff based its equitable rights under the patent upon a contractual agreement that required defendant to assign ownership of the patent to plaintiff. Thus, unlike here, the claim in *Arachnid* did not involve an assertion that the patent had been fraudulently obtained nor did it otherwise require a finding of facts that would have the effect of invalidating the patent at issue.

Plaintiffs respond Cyanamid mischaracterizes their equitable claims as establishing a cause of action for "equitable patent infringement," precluded by *Kennedy* and *Arachnid.*

Plaintiffs argue this preclusion cannot be extrapolated to the notion that there can be no equitable remedies at all. They cite numerous cases, including *Arachnid*, where equitable remedies have been expressly endorsed. **[223]** *See Becher v. Contoure Lab.*, 279 U.S. 388, 49 S.Ct. 356, 73 L.Ed. 752 (1929); *Colgate-Palmolive Co. v. Carter Prods., Inc.*, 230 F.2d 855 (4th Cir.), *cert. denied*, 352 U.S. 843, 77 S.Ct. 43, 1 L.Ed.2d 59 (1956); *Saco-Lowell Shops v. Reynolds*, 141 F.2d 587 (4th Cir.1944); *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed.Cir.), *cert. denied*, 493 U.S. 853, 110 S.Ct. 154, 107 L.Ed.2d 112 (1989).

In *Kennedy*, plaintiff and defendant entered into an agreement in which defendant agreed to assign to plaintiff, and not to any other person, any patent that defendant might obtain for inventions relating to improvements in steam boilers. 128 U.S. at 668, 9 S.Ct. at 202. Thereafter, defendant made such invention and, "with intent to evade his agreement and to defraud the plaintiff, procured a patent for this invention to be obtained upon the application under oath of a third person as the inventor, and to be issued to him as assignee of that person...." *Id.* at 671, 9 S.Ct. at 203. Plaintiff sought, by bill of equity, to compel defendant to assign the patent to him and to account for the profits received under it. *Id.*

In rejecting plaintiff's claim, the *Kennedy* Court held "a decree for profits can only proceed upon the ground that the plaintiff is at least the equitable owner of the patent, and there can be neither legal nor equitable ownership of a void patent." *Id.* at 672, 9 S.Ct. at 203.

Plaintiffs label their sixth claim for relief for "Patent Infringement" and term themselves "equitable owners of Cyanamid's patent," (Second Am. Compl. 75). On the basis of *Kennedy*, there can be no equitable ownership of a void patent and therefore Plaintiffs cannot be rewarded relief under their patent infringement claim. None of the cases relied on by Plaintiffs refute this.

Arachnid is distinguishable because there it was undisputed that the actual inventors obtained the patent at issue

and the plaintiff based its claim to equitable rights under the patent upon a contractual agreement that required defendant to assign ownership of the patent to plaintiff. Similarly, *Becher* involved "breach of contract or wrongful disregard of confidential relations, both matters independent of the patent law...." 279 U.S. at 391, 49 S.Ct. at 357. *Colgate Palmolive Co.* concerned misappropriation of a trade secret resulting "from the employment of one to whom it had been imparted in the course of a former employment," 230 F.2d at 865; *Saco-Lowell Shops* required assignment of a patent based on ideas received by a licensor from a licensee in confidence during the development of an invention, 141 F.2d at 598; and *Richardson* concerned the misappropriation of a trade secret developed by plaintiff pursuant to a formal option and license agreement executed between the parties, 868 F.2d at 1242.

Plaintiffs' sixth cause of action is for patent infringement on the basis that they are the "equitable owners of Cyanamid's patent." Cyanamid's motion for reconsideration persuades me Plaintiffs cannot establish themselves as equitable title holders of the patent entitled to equitable relief. Accordingly, I grant Cyanamid's motion insofar as it requests reconsideration of the denial of summary judgment on the patent infringement claim.

B. *Fraud and Unjust Enrichment Claims.*

In its motion for reconsideration, Cyanamid argues for the first time that Plaintiffs' common law claims for fraud and unjust enrichment are preempted by the Supremacy Clause of the United States Constitution because allowing those claims would grant Plaintiffs a state law patent-like interest in conflict with the Patent Act and because there is no "property" interest at stake in those claims.

These arguments essentially constitute a new summary judgment motion based on a defense never pled and filed without leave five months after the December 15, 1994 deadline for filing dispositive motions. Such arguments fall outside the purview of a motion for reconsideration, the purpose

of which is to correct manifest errors of law or fact or to present newly discovered evidence. Accordingly, I do not consider them and deny Cyanamid's motion insofar as it seeks reconsideration of the Order denying summary **[224]** judgment on Plaintiffs' claims for fraud and unjust enrichment.

C. *Copyright Claim.*

Cyanamid asserts issues of fact should have precluded summary judgment in Plaintiffs' favor on the copyright claim. It maintains the court erred in finding that a September 24, 1991 letter from Dr. Allen to Dr. Ellenbogen granting permission "to use and circulate the results of our studies" could not be construed to mean permission to use the graphs and table contained in the relevant manuscript. Cyanamid argues in so ruling I impermissibly afforded the benefit of inferences to Plaintiffs, the movants.

Cyanamid has not created a genuine issue of fact as to its contention that Dr. Allen's letter gave Cyanamid the right to copy the figures and table into a patent application. To the contrary, Drs. Allen and Ellenbogen and the lawyer who prepared Cyanamid's patent application have all testified they did not intend to read it that way. Accordingly, I find no merit in Cyanamid's request for reconsideration on this ground.

Cyanamid further argues summary judgment on the copyright issue was inappropriate because, in denying Cyanamid's request for summary judgment based on statute of limitations grounds, I found factual issues existed as to whether Plaintiffs should have known of the patent, which precluded summary judgment. Cyanamid reasons at the time of trial a jury may conclude that Plaintiffs should have known of the patent before August 1990 and extrapolates, in that case, Plaintiffs' copyright claim would be barred by the statutes of limitations.

I found whether Plaintiffs should have known of the patent was a genuine issue of fact for trial. I did not find, nor does it follow, that whether Plaintiffs should have known of the copyright infringement is a genuine issue of fact.

Knowledge of the existence of a patent is clearly distinct from knowledge that a particular patent application involved unauthorized copying of copyrighted material. Cyanamid has not persuaded me that granting summary judgment to Plaintiffs on their copyright claim involved a manifest error of law or fact nor has it presented newly discovered evidence warranting reconsideration.

II. *Amendment regarding Controlling Questions of Law.*

Cyanamid requests, in the event I deny its motion for reconsideration with respect to Plaintiffs' patent infringement, fraud and unjust enrichment claims, I amend the opinion to state it involves controlling questions of law on two issues and that such amended opinion be certified to the Court of Appeals for the Federal Circuit.

Because I grant the motion for reconsideration with regard to the patent infringement claim, the first issue on which certification is sought is moot. The second issue concerns whether Plaintiffs' assertion of common law and equitable claims are preempted by the Supremacy Clause. As stated above, the issue of preemption was not raised in Cyanamid's motion for summary judgment and is not properly before me in its motion for reconsideration. Accordingly, I decline the request to amend the opinion.

III. *Conclusion.*

For the aforesaid reasons, I grant Cyanamid's motion insofar as it requests reconsideration of the denial of summary judgment on the patent infringement claim and grant summary judgment for Cyanamid on Plaintiffs' sixth cause of action. I deny Cyanamid's motion in all other aspects.

APPENDIX H

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

THE UNIVERSITY OF COLORADO FOUNDATION, INC., A COLORADO NOT-FOR-PROFIT CORPORATION, THE UNIVERSITY OF COLORADO, AN INSTITUTION OF THE STATE OF COLORADO, THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, A BODY CORPORATE OF THE STATE OF COLORADO, ROBERT H. ALLEN, AN INDIVIDUAL, AND PAUL A. SELIGMAN, AN INDIVIDUAL, PLAINTIFFS,

V

AMERICAN CYANAMID, A MAINE CORPORATION, DEFENDANT.

Civil Actio No. 93-K-1657

April 3, 1995

[880 F. Supp. 1387]

MEMORANDUM OF OPINION AND ORDER

KANE, Senior District Judge.

This action commenced in August 1993. On September 30, 1994, The University of Colorado Foundation, Inc. ("Foundation"), The University of Colorado ("University"), The Regents of the University of Colorado ("Regents"), Robert H. Allen and Paul A. Seligman (collectively "Plaintiffs") filed a Second Amended Complaint alleging that Defendant American Cyanamid Company ("Cyanamid") wrongfully filed and obtained a patent on a reformulated prescription prenatal vitamin called "Materna." Plaintiffs claims for relief are for (1) conversion, (2) fraud, (3) wrongful naming of inventor, (4) copyright infringement, (5) misappropriation,

(6) patent infringement, (7) breach of confidentiality obligation, and (8) unjust enrichment.

[1390] Before me are (1) Plaintiffs' motion for partial summary judgment on their causes of action for conversion, fraud, and copyright infringement, (2) Cyanamid's motion for partial summary judgment on the copyright infringement claim, and (3) Cyanamid's motion for summary judgment on all causes of action. I grant Plaintiffs' motion in part and deny it in part; deny Cyanamid's partial summary judgment motion and grant Cyanamid's motion for summary judgment in part and deny it in part.

Jurisdiction obtains under 28 U.S.C. §§ 1331 and 1338(a) because Plaintiffs seek relief under the Patent Act, 35 U.S.C. § 256 and the Copyright Act, 17 U.S.C. §§ 101-810. Jurisdiction is also founded on 28 U.S.C. § 1332 in that this action is between citizens of different states and the matter in controversy exceeds $50,000.00, exclusive of interest and costs.

I. *Background.*

Cyanamid began marketing its Materna multivitamin in the mid-1970's. In the late 1970's, a competitor of Cyanamid asserted that iron was not being sufficiently absorbed from Materna, due to interference from calcium carbonate which was present in Materna.

In late 1978 or early 1979, Dr. Leon Ellenbogen, a Cyanamid employee, agreed with Plaintiff Dr. Robert Allen, Director of Hematology and Professor of Biochemistry at the University of Colorado Health Sciences Center that Dr. Allen and Plaintiff Dr. Paul A. Seligman, a Professor of Medicine in the same division of hematology, would perform a study on patient volunteers to compare iron absorption from Materna with that from the competitor's product. Drs. Ellenbogen and Allen had known each other since the early 1970s and considered themselves trusted friends.

Although Dr. Ellenbogen had indicated he considered the existence of an iron absorption problem unlikely, he wanted to prove the competitor wrong. Drs. Allen and

Seligman believed there might indeed be a problem. The fee for the study agreed upon between Dr. Ellenbogen on behalf of Cyanamid and Dr. Allen on behalf of the University was $5,000.00 for each of the compositions (Materna and the competitive product) for a total of $10,000.00.

In August 1979, the results of this study (Study I and Study IA) showed there was reduced absorption of iron from both Materna and the competitor's product.

On Dr. Allen's recommendation, Cyanamid engaged him to perform a further study to determine the extent of iron absorption from a composition containing only iron in the form of ferrous fumarate for the purpose of establishing a baseline for comparison with the results of the study on Materna and the competitive product. Cyanamid paid $5000.00 for that study. Drs. Allen and Seligman performed the study, the results of which validated the conclusions of the earlier study that iron absorption from both Materna and the competitive product was probably insufficient to meet the needs of pregnant women.

Drs. Allen and Seligman then conducted research, allegedly independent of Cyanamid, to establish the reason for the poor iron absorption from Materna and the competitive product. In particular, they devised and performed two new studies (Study II and Study IIA) in which they tested whether various combinations of calcium carbonate, calcium sulfate and magnesium oxide interfered with iron absorption. Study II pinpointed the reasons for the poor iron absorption and Study IIA confirmed how Materna could be reformulated to improve iron absorption. Plaintiffs maintain Dr. Allen sent Dr. Ellenbogen letters as a courtesy, explaining the results of these studies and including the new formulation.

Thereafter, Dr. Ellenbogen asked Drs. Allen and Seligman to conduct two further studies (Study III and Study IV) to measure the iron absorption from several competing products and that from two new formulated versions of Materna, including the Study IIA suggested reformulation. Cyanamid paid $5000.00 per composition for these studies

which were performed in late 1980 and early 1981. The studies established Dr. Allen's suggested reformulation, having reduced calcium carbonate and magnesium oxide, showed improved iron absorption.

[1391] Cyanamid maintains Dr. Ellenbogen designed the protocol to be followed in the initial study and this was the standard upon which a series of subsequent studies, including Studies II and IIA, were based. Cyanamid contests Plaintiffs' claim that Cyanamid did not pay for Study IIA and states it paid $7,500 for the study, the first of two conducted in 1980.

Contrary to Plaintiffs' position, Cyanamid contends Dr. Ellenbogen conceived of the revised Materna product. Cyanamid cites the deposition testimony of Dr. Ellenbogen to the effect that a March 4, 1980 letter from Dr. Allen to Dr. Ellenbogen concerning a proposed reformulation was a confirmation of what Drs. Ellenbogen and Allen had previously discussed. Dr. Ellenbogen testified he believes the decision to reduce magnesium and calcium originated with him.

Cyanamid also relies on the testimony of Dr. Robert P. Raymond, counsel who prepared the patent application. Dr. Raymond testified that, in preparing the application in 1981, he relied on a memorandum prepared some time earlier by Dr. Ellenbogen. In Dr. Raymond's view the memorandum showed Dr. Ellenbogen conceived of the reformulation before the alleged March 1980 conception of Drs. Allen and Seligman. Neither Dr. Raymond nor Cyanamid can locate this memorandum. Dr. Raymond identifies it as one of the documents discarded in July 1993, before this action commenced, when Cyanamid's patent law department transferred from Connecticut to New Jersey. Plaintiffs dispute the existence of the memorandum.

In July, 1981, Drs. Allen and Seligman submitted a manuscript, authored by themselves and four of their assistants, entitled "Inadequate Iron Absorption From Many Prenatal Multivitamin-Mineral Supplements" to the *New England Journal of Medicine*. Dr. Allen sent Dr. Ellen-

bogen a courtesy copy of the manuscript in confidence. The Article described Studies I, IA, II, III and IV, the reformulated version of Materna having reduced levels of calcium carbonate and magnesium oxide, and the improved iron absorption. The *New England Journal of Medicine* rejected the manuscript.

In December 1981, Drs. Allen and Seligman resubmitted the manuscript, with certain changes, to a medical journal called *Obstetrics and Gynecology*. Again, Dr. Allen sent Dr. Ellenbogen a courtesy copy of the revised manuscript in confidence. The manuscript, while acknowledging Cyanamid had paid for certain studies, did not name Dr. Ellenbogen as a co-author. Dr. Ellenbogen did not object to this. The manuscript was published in the March 1983 volume of *Obstetrics and Gynecology* (the "Article").

In 1981 and 1982, after Cyanamid had adopted a reformulated version of Materna containing reduced amounts of calcium and magnesium oxide, Cyanamid issued various press releases and held a press conference with Dr. Allen describing the studies and the enhanced iron absorption from the reformulated version. Plaintiffs state at the press conference, in each of the press releases, in correspondence with the U.S. Food and Drug Administration, and in numerous internal memoranda, Cyanamid credited Dr. Allen with the discovery that the reason for poor absorption before the reformulation was interference by calcium carbonate and magnesium oxide.

Drs. Allen and Seligman, as employees of the University, were subject to its patent policy. Under this policy, inventions made by University employees using University facilities were to be assigned by the inventors to the University, subject to a royalty interest payable to the inventors personally. Any other assignment of such inventions could be made only by the University. The Foundation had a contractual relationship with the University for exploiting inventions of the University.

Plaintiffs claim the reformulation was invented by Drs. Allen and Seligman using University time and facilities and,

therefore, under the University policy, Drs. Allen and Seligman were and are the equitable owners of the invention. Under the patent policy, Drs. Allen and Seligman were required to take certain measures to protect any claimed invention. Drs. Allen and Seligman did not take such measures in relation to the reformulation of the Materna multivitamin, allegedly **[1392]** because they did not realize they had discovered a patentable invention.

According to Plaintiffs, shortly after receiving the courtesy copy of the manuscript of the Article, Dr. Ellenbogen contacted a Cyanamid in-house patent attorney to discuss patenting the invention. Cyanamid then prepared a patent application using information, drawings and a table from the Article.

On December 21, 1981, Cyanamid filed a patent application in its own name, naming Dr. Ellenbogen as the sole inventor and Cyanamid as assignee. The application covered the reformulated version of Materna which Dr. Allen had described in the results of Study IIA. Cyanamid has since enforced its patent monopoly to prevent competition by various generic drug manufacturers.

After the studies described above, Cyanamid, through Dr. Ellenbogen, contracted with Drs. Allen and Seligman from time to time to perform additional studies involving the Materna multivitamin and other iron-containing preparations for agreed upon fees. These studies continued until 1989. Cyanamid and the University entered into formal agreements governing the parties' rights to intellectual property other than the reformulated version of Materna.

Plaintiffs maintain Cyanamid did not directly tell Drs. Allen or Seligman or the University anything about the patent related to the studies which issued in 1984 ("Patent"). Cyanamid disputes this and claims there was widespread availability of public information relating to the Patent and that Cyanamid began marking the Patent on Materna labels shortly after it issued. Plaintiffs claim they finally learned of the Patent in the summer of 1993 and then filed this action.

II. *Standards for Summary Judgment.*

Summary judgment is proper where the pleadings, depositions, answers to interrogatories and admissions on file, together with any affidavits, show there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law. Fed.R.Civ.P. 56(c); *Celotex Corp.* v. *Catrett*, 477 U.S. 317, 322, 106 S.Ct. 2548, 2552, 91 L.Ed.2d 265 (1986). In considering this motion, one must construe the factual record and reasonable inferences therefrom in the light most favorable to the non-moving party. *Cone* v. *Longmont United Hosp. Ass'n*, 14 F.3d 526, 528 (10th Cir.1994). The mere allegation of a factual dispute will not defeat a properly supported motion for summary judgment. *Anderson* v. *Liberty Lobby, Inc.*, 477 U.S. 242, 256, 106 S.Ct. 2505, 2514, 91 L.Ed.2d 202 (1986). The non-moving party must point to specific facts, "by any of the kinds of evidentiary materials listed in Rule 56(c), except the mere pleadings themselves," to avoid summary judgment. *Celotex*, 477 U.S. at 324, 106 S.Ct. at 2553.

III. *Merits.*

1. *Conversion.*

Plaintiffs allege Cyanamid is liable for conversion by virtue of having "intentionally exercised dominion and control over Plaintiffs' invention by filing a patent application" and of having "wrongfully deprived Plaintiffs of Plaintiffs' right to control the invention by denying Plaintiffs the opportunity to license or otherwise exploit the invention." (Second Am. Compl. ¶¶ 54-55). Both Plaintiffs and Cyanamid maintain as a matter of law they are entitled to judgment on the conversion claim.

Under Colorado law "[c]onversion is defined as any distinct, unauthorized act of dominion or ownership exercised by one person over personal property belonging to another." *Glenn Arms Assocs.* v. *Century Mortgage & Inv. Corp.*, 680 P.2d 1315, 1317 (Colo.App.1984). "Although the act of conversion takes place at the time the converter takes dominion over the property, predicates to a successful claim for con-

version are the owner's demand for the return of the property and the controlling party's refusal to return it." *Id.*

Plaintiffs preface their argument in support of the claim for conversion by stating that Drs. Allen and Seligman are the true inventors of the reformulated Materna because the reformulation was initially their conception. They cite *Burroughs Wellcome Co.* v. *Barr Laboratories*, 828 F.Supp. 1200, 1208 (E.D.N.C.1993), an action for patent infringement, where the court considered the **[1393]** issue of inventorship of the drug AZT used in treating Human Immunodeficiency Virus ("HIV") which causes AIDS. The *Burroughs* court held "[t]he key to determining inventorship is conception. 'Unless a person contributes to conception of the invention, he is not an inventor.'" *Id.* (citations omitted).

Plaintiffs maintain Drs. Alan and Seligman had a conception of the reformulated Materna before any conception by Dr. Ellenbogen, and therefore they are the true inventors and owners of the invention which, they maintain Cyanamid converted. Plaintiffs distinguish between the "invention" which they define as "an idea" and the "[p]atent rights to it [which] are property rights." (*See* Pls.' Reply Br. Supp. Pls. Mot. Partial Summ.J. at 18.) Defendants argue there are no reported decisions extending conversion under Colorado law to "inventions or ideas in general." (Defs.' Memo Law Supp. Mot. Summ.J. at 27.)

Colorado courts have not defined the parameters of "personal property" within the definition of conversion. What may be converted is discussed by W. Page Keeton et al. in *Prosser and Keeton on the Law of Torts* § 15 at 90-92 (5th ed. 1984). The authors state initially the only property subject to conversion was a tangible chattel that could be lost and found. *Id.* at 90. The courts have subsequently relaxed this rule to allow conversion of intangible property rights in the following circumstances: (1) conversion of a document in which intangible rights are merged, e.g., a promissory note, check, bond, bill of lading or stock certificate; (2) conversion of a tangible object which was highly important to the exercise of an intangible right, e.g., a sav-

ings bank book, an insurance policy, a tax receipt, account books; (3) conversion of specific rights without an accompanying conversion of anything tangible, e.g. where a corporation refuses to register a transfer of the rights of a shareholder on its books. *Id.* at 90-91.

Plaintiffs maintain "[t]he cases uniformly allow conversion actions under the circumstances of the present case." (Pls.' Br. Opp. Mot. Summ.J. at 31.) However, in none of the cases cited by Plaintiffs, was a cause of action for conversion adjudicated.

Plaintiffs rely on *Richardson* v. *Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir.), *cert. denied*, 493 U.S. 853, 110 S.Ct. 154, 107 L.Ed.2d 112 (1989) in support of their claim. The plaintiff in *Richardson* did not, however, assert a conversion claim. There the court awarded relief based upon defendant's misappropriation of a trade secret developed by plaintiff pursuant to a formal Option and License Agreement ("Agreement") executed between the parties. The Federal Circuit reviewed inconsistent findings rendered by the jury after a forty-seven day trial and concluded that plaintiff had disclosed an invention pursuant to the Agreement and that defendant, in violation of its formal obligation of confidentiality, wrongfully obtained a patent on the invention, naming two of its employees as inventors. The Federal Circuit stated "[b]ased on the jury verdict, Richardson is entitled to ownership of the patents as against Suzuki." *Id.* at 1249.

Here, unlike in *Richardson*, Plaintiffs voluntarily disclosed the invention to Cyanamid and consented to Cyanamid's sale of the reformulated Materna product which, they claim embodies their invention. Plaintiffs cannot justify their conversion claim on the basis of *Richardson*, which not only concerned somewhat different facts, but did not involve a claim for conversion.

Plaintiffs reliance on other cases cited in *Richardson* in support of their conversion claim is similarly tenuous. Although in each of those cases the court ordered the assignment of patent rights, none concerned a cause of action for conversion. *See Colgate-Palmolive Co.* v. *Carter Products*,

Inc., 230 F.2d 855, 865 (4th Cir.), *cert. denied*, 352 U.S. 843, 77 S.Ct. 43, 1 L.Ed.2d 59 (1956) (assignment ordered due to misappropriation of a trade secret resulting "from the employment of one to whom it had been imparted in the course of a former employment"); *De Long Corp.* v. *Lucas*, 176 F.Supp. 104, 134 (S.D.N.Y.1959), *aff'd*, 278 F.2d 804 (2nd Cir.), *cert. denied*, 364 U.S. 833, 81 S.Ct. 71, 5 L.Ed.2d 58 (1960) (former employee's breach of no- competition clause and breach of covenant not to disclose trade secrets entitled former employer to assignment of patent rights); **[1394]** *Becher* v. *Contoure Labs., Inc.*, 279 U.S. 388, 391-92, 49 S.Ct. 356, 357-58, 73 L.Ed. 752 (1929) (assignment of patent ordered where employee filed patent application on invention of former employer after agreeing to keep secret information rendered to him by the employer); *Saco-Lowell Shops* v. *Reynolds*, 141 F.2d 587, 598 (4th Cir.1944) (requiring assignment of patent based on ideas received by licensor from licensee in confidence during the development of an invention).

Plaintiffs also rely on *Stark* v. *Advanced Magnetics, Inc.*, 29 F.3d 1570, 1578 (Fed.Cir.1994). There, an alleged inventor brought an action requesting correction of inventorship of six patents assigned to the corporation and asserted related state law claims, including a claim for conversion. The district court granted summary judgment to the corporation with respect to correction of inventorship and dismissed the state law tort claims as barred by the three year statute of limitations. The Federal Circuit vacated the summary judgment as to the patent counts. It also vacated the dismissal of the state law tort claim because certain "complexities of facts and law were not explored by the district court" on the statute of limitations issue. Thus, neither the district court nor the Federal Circuit addressed the merits of any of the tort claims, including the cause of action for conversion.

Cyanamid cites *Liebowitz* v. *Maxwell*, 32 U.S.P.Q.2d 1683, 1686, 1994 WL 517456 (S.D.N.Y.1994) where the court dismissed plaintiff's claim for conversion of a trademark on

the grounds that the kinds of intangible property for which actions of conversion had been recognized in Maryland were rights which had been incorporated in documents which were then converted, e.g., stocks and insurance policies. "Since defendants have not withheld anything tangible and even under Maryland's 'liberal' definition of conversion 'the initial focus continues to be on the tangible item withheld' plaintiffs' claim for conversion cannot stand." *Id.* (citation omitted).

Cyanamid also cites as persuasive authority *Miles, Inc.* v. *Scripps Clinic & Research Foundation*, 810 F.Supp. 1091, 1096 (S.D.Cal.1993). There the court refused to extend the law of California to permit a claim for conversion of a right to commercialize a "cell line," even though a cell line may be patented. The court noted "it is not uncommon for a person to have an intangible property right without a cause of action in conversion to protect that right." *Id.*

In *Mackay* v. *Benjamin Franklin Realty & Holding Co.*, 288 Pa. 207, 135 A. 613, 614 (1927), the court held that an action for conversion was not maintainable against a builder whose architect used another architect's ideas but never had possession of his plans. "We are aware that an action of trover and conversion can be maintained for almost any kind of personalty, including money, notes, bonds, certificates of stock, title deeds, etc., but no authority was cited and we know of none where such action has been sustained for something so intangible as an idea, not connected with physical property." *Id.*

In *Thompson* v. *Mobil Producing Co.*, the court held "[p]ersonal property is the subject of conversion 'if of a tangible nature, or if it is tangible evidence of title to intangible or real property.'" 163 F.Supp. 402, 404 (D.Mont.1958) (citing 89 C.J.S. *Trover & Conversion* §§ 11 and 12 and cases there cited). The court concluded that confidential oil information with respect to options to lease land was "not property which could be the subject of an action in conversion." *Id.*

Here, Plaintiffs do not claim any document confers an intangible right and that there has been conversion of such document amounting to conversion of the right. Therefore the alleged conversion does not fall within the first two categories mentioned in W. Page Keeton et al., *supra* § 15 at 91. Plaintiffs appear to argue that the third type of intangible property conversion applies, i.e. that there has been a conversion of rights without the accompanying of something tangible. Courts have, however, limited this third category to where a corporation refuses to register a transfer of rights of a shareholder on its books. *See* W. Page Keeton et al., *supra* § 15 at 91 n. 30 and cases cited therein; *see also Calabrese Found., Inc.* v. *Investment Advisors Inc.*, 831 F.Supp. 1507, 1515 (D.Colo.1993) (applying Minnesota law, the **[1395]** court refused to extend the third category to the unauthorized transfer of funds).

The Colorado Supreme Court addressed a claim relating to conversion of an intangible right in *McLaughlin* v. *Clementi*, 144 Colo. 34, 355 P.2d 100, 104 (1960). The court held an order directing repossession of a permit without foreclosure or execution was a nullity and the seller's exercise of dominion over the permit amounted to conversion. The facts of *McLaughlin* bring it within the category of conversion of a document amounting to the conversion of an intangible right. I find no Colorado case recognizing conversion of an intangible right unaccompanied by a document evidencing title to that right.

After reviewing the authorities, W. Page Keeton et al. conclude that "[t]he process of expansion [of traditional conversion law] has stopped with the kind of intangible rights which are customarily merged in, or identified with some document." *Supra* § 15 at 92. Plaintiffs cite no authority, nor do I find any authority which leads me to conclude that the Colorado Supreme Court would recognize a cause of action for conversion in the circumstances of this case. I therefore conclude Cyanamid is entitled to judgment as a matter of law on Plaintiffs' first cause of action for conversion.

2. *Fraud.*

Plaintiffs allege Cyanamid is liable for fraud because it "had an on-going duty to disclose to Dr. Allen the filing of the patent application related to the studies conducted by Dr. Allen, as a result of the continuing relationship of trust between Dr. Allen and Dr. Ellenbogen and as a result of the obligation of good faith and fair dealing arising out of the on-going contractual relationship between the parties, before, during and after the studies." (Second Am. Compl. ¶ 59.) They maintain Cyanamid failed to disclose to Plaintiffs that it "intended to and did file a patent application on the reformulated version of Materna invented by Drs. Allen and Seligman," (*id.* ¶ 60,) intending that "Plaintiffs would not demand their rights to the patent or object to the copying of portions of the Article" (*id.* ¶ 61). Plaintiffs contend they justifiably relied on Cyanamid's aforesaid failure to disclose and "were thereby damaged by the deprivation of the right to license and otherwise exploit the patent." (*Id.* ¶ 63.) Plaintiffs and Cyanamid seek summary judgment on the fraud claim.

Restating the *Colorado Jury Instructions*, the pertinent elements of fraud by non-disclosure are:

> (a) the defendant failed to disclose a past or present fact which it had a duty to disclose;
>
> (b) the fact was material;
>
> (c) the defendant failed to disclose the fact with the intent that the plaintiff take a course of action it might not take if it knew the actual facts;
>
> (d) the plaintiff took such action or decided not to act relying on the assumption that the undisclosed fact did not exist or was different from what it actually was;
>
> (e) the plaintiff's reliance was justified; and
>
> (f) this reliance caused damage to the plaintiff.

C.J.I.--Civ.3d, § 19:2 and cases cited therein, especially *Kopeikin* v. *Merchants Mortgage & Trust Corp.*, 679 P.2d 599, 601 (Colo.1984) (confirming *Morrison* v. *Godspeed*, 100

Colo. 470, 68 P.2d 458, 462 (1937) as the leading case setting out the elements of fraudulent concealment or non-disclosure); *Ackmann* v. *Merchants Mortgage & Trust Corp.*, 645 P.2d 7, 13 n. 3 (Colo.1982) ("[t]he statement of the elements of fraud by concealment in the Colorado Jury Instructions is substantially similar to the articulation of those elements contained in our case law").

Whether Cyanamid had a duty to disclose its intention to and filing of the Patent application depends on who was the inventor of the reformulated version of Materna patented. If Drs. Allen and Seligman invented the reformulation, it would seem conscionable for Cyanamid to have advised them of its intention to file for the Patent; if not, there does not seem to be a basis for such duty.

Plaintiffs allege, and argue in affidavit, that they are the inventors of the reformulation and therefore justifiably assumed Cyanamid would inform them of its patentability. Cyanamid, on the other hand, argues, relying **[1396]** on the deposition testimony of Drs. Ellenbogen and Ray, that Dr. Ellenbogen conceived of the reformulation and was responsible for the protocol on which the relevant studies were based.

Because the material facts regarding inventorship are sufficiently disputed, I am unable to determine whether the elements of fraud by non- disclosure are satisfied. As I have noted, "[o]n a summary judgment motion, no margin exists for the disposition of factual issues, nor does such a motion serve as a substitute for trial when there are disputed facts." *Wilbourn* v. *Mostek Corp.*, 537 Fed.Supp. 302, 306 (D.Colo.1982). In these circumstances, it is inappropriate to grant summary judgment on the fraud cause of action.

3. *Wrongful Naming of Inventor and Patent Infringement.*

Cyanamid seeks summary judgment on Plaintiffs' third claim for wrongful naming of inventor and sixth claim for patent infringement. I address these claims together as both are premised on breaches of the Patent Act, 35 U.S.C. §§ 1- 376.

Plaintiffs claim "Cyanamid's actions are in violation of Section 115 of the Patent Act, 35 U.S.C. § 115, which requires that the true inventors be named on a patent application." (Second Am. Compl. ¶ 65.) They maintain that they are the "equitable owners of Cyanamid's patent," (*id.* ¶ 75), and "Cyanamid's manufacture and sales of the Materna multivitamin incorporating the invention of Drs. Allen and Seligman, without authorization from Plaintiffs, constitute willful infringement of Plaintiffs' equitable patent rights," (*id.* ¶ 76). On the basis of the alleged patent infringement, Plaintiffs seek, inter alia, damages and "[a]n order revising the name of the inventor on the patent to name only the true inventors, namely Drs. Allen and Seligman," (*id.* at 20).

a. *Patent Infringement.*

Cyanamid argues, even if plaintiffs were able to establish equitable rights to the Patent, those rights would not form a valid basis for Plaintiffs' sixth claim for relief because "[l]egal, not equitable, ownership in a patent is necessary for standing to maintain an action for damages based on a claim of patent infringement." (Def.'s Memo Law Support Mot. Summ.J. at 19.) Cyanamid maintains, since Plaintiffs cannot claim legal ownership of the Patent, they do not have standing to recover money damages under the Patent Act.

Cyanamid relies on *Arachnid, Inc.* v. *Merit Industries, Inc.*, where the court held: "The general rule is that one seeking to recover money damages for infringement of a United States patent (an action 'at law') must have held the legal title to the patent *during the time of the infringement.*" 939 F.2d 1574, 1578, 1579 (Fed.Cir.1991). The persons holding such legal title are "'the patentee, his assignee, his grantee, or his personal representatives; and none but these are able to maintain an action for infringement in a court of law.'" *Id.* (citing *Crown Die & Tool Co.* v. *Nye Tool & Mach. Works*, 261 U.S. 24, 40-41, 43 S.Ct. 254, 258, 67 L.Ed. 516 (1923)).

Arachnid concerned an ownership dispute over a patent that was issued to a consulting company (IDEA) whose em-

ployees invented a novel type of coin-operated electronic dart game. Kidde Recreation Products, Inc., not a party to the litigation, later purchased the patent which was then assigned to it. Plaintiff Arachnid obtained assignment of the patent against IDEA after it established IDEA employees had conceived of the invention during the course of a contractual relationship between Arachnid and IDEA. Pursuant to the contract, all inventions made by IDEA or its employees during the contract period, belonged to Arachnid. Arachnid sued Merit for alleged acts of patent infringement which occurred after the issuance of the patent to IDEA and before the court ordered assignment to Arachnid.

The Federal Circuit rejected Arachnid's "'Back-to-the-Future' theory" that it had always been the owner of the patented invention and therefore had standing to sue for infringement occurring before it became the patent's legal owner. *Arachnid*, 939 F.2d at 1579. The court held that, pre-assignment, Arachnid could only assert equitable, not legal title to the patent and, accordingly, could **[1397]** not maintain an action at law for damages for infringement of patent.

Plaintiffs argue they seek an assignment of the patent, effective as of the date the patent issued, and an order establishing Cyanamid's holding of the Patent as constructive trustee for their benefit. They assert the assignment should include the right to sue for past infringement to protect their interests in their patent held in trust by Cyanamid.

Plaintiffs attempt to distinguish *Arachnid* "factually and equitably from the present case." (Pls.' Br. Opp. Def.'s Mot. Summ.J. at 62.) There, the inventor was contractually obligated to assign the patent to plaintiff Arachnid, but did not do so. The defendant, a third party, had in good faith obtained a license to the patent from the inventor's company, IDEA. Therefore, Arachnid never held legal title, but only equitable title in the form of the right to receive an assignment during the time of the third party's infringement.

Plaintiffs argue under the Patent Act they were always the "true owners of the Patent rights," (*id.*), because, as the

inventors, Drs. Allen and Seligman initially owned the patent and legal title could not be conveyed absent an assignment. Plaintiffs maintain "[t]he fact that Cyanamid applied its own name to the Patent does not give it legal title; the only way to obtain legal title is to be the inventor or to receive a valid assignment from the inventor." (*Id.* at 63.)

Plaintiffs have not overcome the clear statement in *Arachnid* that:

> A patent is a creature of statute, as is the right of the patentee to have a remedy for infringement of his patent. Suit must be brought on the patent, as ownership only of the invention gives no right to exclude, which is obtained only from the patent grant. In order to exercise that right, a plaintiff must necessarily have standing as comprehended by the patent statute.
>
> *Arachnid*, 939 F.2d at 1578-79 (footnotes omitted).

Based on *Arachnid*, Plaintiffs cannot succeed in a claim for damages under the Patent Act since they do not have legal title as contemplated by the Act. Nevertheless, Plaintiffs seek not only damages but equitable remedies. These include the profits on the sale of Materna since the patent was issued, an order establishing Cyanamid as constructive trustee of its profits on the sale of Materna since the date the patent was issued, an order establishing Plaintiffs as the owners of right, title and interest to the patent as of the date of issuance of the patent and an order revising the name of the inventor on the patent. (Second Am.Compl. at 19-20.).

As the court acknowledged in *Arachnid*, "a federal district court has jurisdiction to determine a 'claim for infringement,' asserted by an adjudged equitable title holder, as a prerequisite to awarding equitable relief for that infringement." *Arachnid*, 939 F.2d at 1580. Here, unlike in *Arachnid*, Plaintiffs seek not only money damages, a remedy at law, but also equitable remedies.

Cyanamid has not shown, as a matter of law that Plaintiffs cannot establish themselves as equitable title holders of

the patent entitled to equitable relief. Therefore, there is no basis for granting summary judgment as requested by Cyanamid on the sixth claim for relief of patent infringement.

b. *Wrongful Naming of Inventor.*

Plaintiffs claim the naming of Dr. Ellenbogen as the inventor on the Patent is in violation of 35 U.S.C. § 115. That section requires that "[t]he applicant shall make oath that he believes himself to be the original and first inventor of the . . . composition of matter, or improvement thereof, for which he solicits a patent." 35 U.S.C. § 115. Based on this alleged violation, Plaintiffs seek relief pursuant to 35 U.S.C. § 256 in the form of "[a]n order revising the name of the inventor on the patent to name only the true inventors, namely Drs. Allen and Seligman," (Second Am.Compl. at 20).

Section 256 provides in pertinent part:

> Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application **[1398]** of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

35 U.S.C. § 256.

Cyanamid first argues the Plaintiffs' cause of action based on § 115 is misplaced since that section does not create a private cause of action but only a duty between the patent applicant and the Patent and Trademark Office. Cyanamid relies on *Wise* v. *Hubbard*, 769 F.2d 1, 3 (1st Cir.1985). There the First Circuit affirmed the granting of summary judgment dismissing plaintiff's claim of conversion on the grounds that the three-year statute of limitations had expired. Plaintiff argued the limitations period should have been tolled because, *inter alia*, defendant fraudulently concealed his actions in the face of the duty to disclose imposed by 35 U.S.C. § 115. The court rejected this argument, stating:

> This statute creates no duty between the patent applicant and the purported inventor. Instead, because the Patent and Trademark Office's interest is in rewarding the true inventor with the issuance of a letter patent, the sole duty created is between the applicant and the Office. Breach of this duty results in the patent being "unauthorized by law and void...." *Kennedy* v. *Hazelton*, 128 U.S. 667, 672, 9 S.Ct. 202, 203, 32 L.Ed. 576 (1888).

Wise, 769 F.2d at 3. Plaintiffs offer no authority to the contrary but contend "the violation is of § 115, and the remedy is under § 256." (Pls.' Br. Opp. Def.'s Mot. Summ.J. at 59.)

Cyanamid points out that Plaintiffs' right to pursue a cause of action under § 256 is questionable since they do not advance such cause of action in their Second Amended Complaint. Although Plaintiffs do not frame a cause of action under § 256, they assert this court's jurisdiction based in part on § 256, (Second Am. Compl. ¶ 7), and pray for "[a]n order revising the name of the inventor on the patent to name the only true inventors, namely Drs. Allen and Seligman," (*id.* at 20). Accepting that such pleading suffices under notice pleading requirements, I address whether Plaintiffs' request for the correction of the inventor's name under § 256 is fitting.

Cyanamid claims § 256 is intended to permit correction of inventorship where error is inadvertent and "without deceptive intent" and Plaintiffs' allegations of fraud on the part of Cyanamid render the section inapplicable. The rationale here is if the patentee applied for the patent with the deceptive intent of omitting an inventor, the patent is invalidated and cannot be corrected. *See General Elec. Co.* v. *Brandon*, 25 U.S.P.Q.2d 1885, 1887, 1992 WL 394933 (N.D.N.Y.1992).

Cyanamid acknowledges neither the Supreme Court nor the Federal Circuit has squarely addressed whether the words "without deceptive intent" in § 256 refer to the patentee, the omitted inventor, or both. Nevertheless, Cyanamid argues case law from the district courts supports the

position that § 256 is inapplicable where a plaintiff alleges the defendant/patentee acted with deceptive intention when it failed to identify a true inventor.

Cyanamid relies on the recent decision of *McMurray* v. *Harwood*, 870 F.Supp. 917, 918-20 (E.D.Wis.1994) and cases cited therein. There, plaintiff, alleging his former employer wrongfully procured a patent on plaintiff's invention, sought correction of inventorship under § 256. In initially dismissing the action, the district court held plaintiff's § 256 claim deficient because that section 1) did not permit a complete substitution of one inventor for another; and 2) is not applicable where the error is a result of fraud on the part of the patentee. *Id.* at 918-20.

On a motion for reconsideration, the court recognized the 1982 amendments to § 256 permit the substitution of the name of the erroneously named patentee with that of the innocent inventor. However, the court held the 1982 amendments "did not overturn prior (and subsequent) authority which uniformly holds that § 256 does not permit 'correction' where the named person is accused of deception or fraud." *Id.* at 920-21. *See also General Elec.* v. *Brandon*, 25 U.S.P.Q.2d at 1887 (dismissing § 256 claim because "at a minimum there must be a lack of deceptive intention on the part of the person originally **[1399]** named as the inventor.... [and] the tenor of the complaint is that defendant did not mistakenly name himself as the sole inventor.")

Plaintiffs contend "the cases are mixed on whether deceptive intention by the defendant precludes correction by the plaintiff, but on balance they do not support Cyanamid's contention." (Pls.' Br. Opp. Def.'s Mot. Summ.J. at 59.) They maintain the *General Electric* case is not conclusive because the plaintiff did not mention § 256 in the complaint and the court noted most of the cases allowing correction where there was deception on the part of the defendant were decided before the 1982 amendments.

The court in *General Electric*, however, determined the claim as if it had been framed under § 256 and noted the " 'deceptive intention' language was not changed in the 1982

amendment." *General Electric*, 25 U.S.P.Q.2d at 1887. Further, McMurray confirms the 1982 amendments did not overturn uniform authority disallowing correction under § 256 where the named patentee is accused of deception. 870 F.Supp. at 920-21.

Plaintiffs reliance on *Stark* v. *Advanced Magnetics, Inc.*, 29 F.3d 1570, 1573 (Fed.Cir.1994) is misplaced. In *Stark*, the district court granted summary judgment to the defendant after finding the plaintiff failed to exercise diligence in seeking correction of the patent at issue. The Federal Circuit noted "[t]he purpose of § 256 was to provide a remedy for a bona fide mistake in inventorship. S.Rep. No. 1979, 82nd Cong., 2d Sess. 7 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2401." *Id.* The court then reversed on the basis that § 256 does not require an omitted inventor must diligently bring a claim under it. *Id.* at 1574. The *Stark* court did not address the issue of whether § 256 permits a claim where an allegedly innocent plaintiff claims fraud on the part of defendant patentee.

Plaintiffs' reliance on *MCV, Inc.* v. *King-Seeley Thermos Co.*, 870 F.2d 1568 (Fed.Cir.1989) is also to no effect. There, the court acknowledged that, only if co-inventorship were found, would it then "tackle the question of whether nonjoinder was 'without deceptive intention' within the meaning of section 256." *Id.* at 1571. The Federal Circuit did not find co- inventorship and therefore did not reach the issue under consideration.

Similarly, Plaintiffs' reliance on *Manildra Milling Corp.* v. *Ogilvie Mills, Inc.*, 783 F.Supp. 1288 (D. Kan. 1990) is not persuasive. There, the court allowed correction under § 256 of errors resulting from "errors in judgment" in addition to those resulting from "inadvertence, accident or mistake." *Id.* at 1291. The court relied on the holding in *In re Schmidt*, 293 F.2d 274, 278-79 (C.C.P.A.1961) which held § 256 should be given a liberal construction. However, as noted in *McMurray*:

> The liberal quality of the section derives from the fact that "innocent" errors should be easily and

> readily correctable on joint application. Not so where the parties are at each others' throats. Further, pursuant to § 256, the court may "order correction of the patent." Should the plaintiff demonstrate fraud, the patent would be per se invalid. Even the most "liberal" reading of § 256 can not turn the power to correct into the power to invalidate.

870 F.Supp. at 920-21 n. 1. I therefore conclude § 256 is not applicable here where Plaintiffs seek correction based on Cyanamid's alleged fraud and deception.

Plaintiffs argue

> [i]n any event, it may be premature to rule out the possibility as a matter of law that the naming of inventor was without deceptive intent at the time it occurred.... A jury may find that Dr. Ellenbogen is not the true inventor and that the Professors are, but that Cyanamid's naming of Dr. Ellenbogen was not intentionally deceptive but merely erroneous.
>
> (Pls.' Br. Opp. Defs.' Mot. Summ.J. at 61.)

Once again, the remarks in *McMurray* are pertinent. Faced with plaintiffs' request to proceed with alternative theories under § 256, including the possibility that defendant acted without deception, the court stated: "Such a claim is so contrary to plaintiffs' original § 256 claim (and each of state theory) that it can hardly be deemed 'alternative.' Further, plaintiff's § 256 fraud claim would not be presented to the jury in any case because it has been dismissed as a matter of **[1400]** law." 870 F.Supp. at 920-21 (footnote omitted). I agree.

I therefore conclude, as a matter of law, Cyanamid is entitled to judgment on Plaintiffs' third cause of action for wrongful naming of inventor.

4. *Copyright Infringement.*

Plaintiffs and Cyanamid have filed cross-motions for summary judgment on this cause of action. In their fourth

claim for relief, Plaintiffs allege the Article constitutes "an original work of authorship and is copyrightable subject matter," (Second Am.Compl. ¶ 67), and "Plaintiffs were the owner (sic.) of the copyright on the Article at the time portions of it were copied, including by means of tracing, and cutting and pasting, by Dr. Ellenbogen and/or the Cyanamid in-house patent attorney on behalf of Cyanamid," (*id.* ¶ 68). Plaintiffs maintain such actions of Cyanamid constitute copyright infringement. (*Id.* ¶ 69.) Plaintiffs seek, *inter alia*, Cyanamid's profits attributable to the copyright infringement and damages suffered by Plaintiffs due to the copyright infringement. (*Id.* at 20.)

Plaintiffs cite the requirements for establishing a copyright infringement case as follows:

> Reduced to most fundamental terms, there are only two elements necessary to the plaintiff's case in an infringement action: ownership of the copyright by the plaintiff and copying by the defendant.

3 Melville B. Nimmer & David Nimmer, *Nimmer on Copyright* § 13.01 (1994) (footnotes omitted).

a. *Ownership of the Copyright.*

Plaintiffs have obtained a copyright registration certificate in the name of the Regents from the Copyright Office "for both the Article as it was submitted to the New England Journal and the Article as it was submitted to Obstetrics and Gynecology." (Pls.' Br. Supp. Mot. Partial Summ.J. at 65). They claim "such certificates constitute prima facie evidence of ownership by the Regents." (Id.)

Cyanamid "disputes the legal import of plaintiffs' recently-obtained registration certificate." (Def's. Memo Law Opp. Pls.' Mot. Partial Summ.J. & Supp. Mot. Partial Summ.J. at 26.) It points out Plaintiffs first sought copyright registration certificates in December 1993, only after commencement of this lawsuit and more than ten years after publication of the Article containing the allegedly protected figures and table. Cyanamid correctly notes a certificate of registration is only prima facie evidence of the validity of the

copyright if the registration is sought within five years of the first publication of the work. 17 U.S.C. § 410(c). Notably, however, "[t]he evidentiary weight to be accorded the certificate of a registration made thereafter shall be in the discretion of the court." *Id.*

Plaintiffs maintain the Regents "are quite obviously the owner, because the Article is a 'work made for hire' by the co-authors done within the scope of their employment."[1] (Pls.' Reply Br. Supp. Mot. Partial Summ. J. at 29 n. 55) Plaintiffs argue Cyanamid has offered no evidence to rebut such ownership. I agree.

Cyanamid offers no evidence which places in issue the original authorship of the Article by Drs. Allen and Seligman, nor the Regents' entitlement to ownership of the copyright as their employer.[2] I therefore conclude Plaintiffs **[1401]** have satisfied the first requirement of ownership of the copyright.

---

[1] The Copyright Act provides:

(a) Initial Ownership.--Copyright in a work protected under this title vests initially in the author or authors of the work....

(b) Works Made for Hire.--In the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for purposes of this title, and ... owns all the rights comprised in the copyright. 17 U.S.C. § 201.

[2] The copyright infringement allegedly occurred in about December 1981 when Cyanamid submitted its patent application. The Article was accepted for publication in August 1982 and published in the March 1983 issue of Obstetrics and Gynecology. The Article as published reflects a copyright in 1983 by the American College of Obstetricians and Gynecologists. (Second Am. Compl., Ex. A at 362.) This is not discussed in the briefs. However, if Plaintiffs assigned the copyright to the American College of Obstetricians and Gynecologists, this would have occurred after the alleged infringement in December 1981.

Even if the copyright was assigned to the American College only after the infringement, it may affect the amount of damages arising out of the infringement. Conceivably, Plaintiffs cannot claim profits or damages attributable to the infringement for the period of assignment of the copyright.

b. Copying by Cyanamid.

Cyanamid points to no specific facts to dispute the figures and tables of the patent application are substantially similar to and are copied from the figures and tables of the Article. Cyanamid principally argues no copyright infringement occurred because Dr. Allen authorized it to copy the figures and table into the patent application and that such figures and table are not copyrightable subject matter. Cyanamid also contends any profits earned by Cyanamid are too attenuated to the alleged infringement to permit an award of such profits to Plaintiffs.

c. Authorization to Copy.

[7] Cyanamid, relying on a September 24, 1981 letter from Dr. Allen to Dr. Ellenbogen, claims it had authority to copy the table and figures in the Article. That letter reads in pertinent part: "I am pleased to grant permission to you and Lederle Laboratories to use and circulate the results of our studies concerning the absorption of iron from prenatal multivitamin- mineral supplements prior to their publication." (Pls.' Br. Supp. Mot. Partial SummJ., Att. E, Ex. 60.)

Plaintiffs counter this letter does not constitute evidence that Dr. Allen authorized Cyanamid to copy the figures and table from the Article. They maintain "[t]he reason was that scientific journals frown upon or outright prohibit the presentation of literal portions of articles to be published prior to the actual publication." (Pls.' Reply Br. Supp. Mot. Partial Summ. at 30.) Plaintiffs note Dr. Ellenbogen was copied on a letter containing such prohibition from the *Journal of Obstetrics and Gynecology* when it accepted the Article. (Pls.' Br. Supp. Mot. Partial Summ., Att. E at 379 and Ex.67.) Moreover, Dr. Ellenbogen acknowledged this is a common type of prohibition by a journal. (*Id.* at 379.)

Thus, the evidence offered contradicts Cyanamid's contention that Dr. Allen authorized the copying of the figures and the table in the Article.

d. Copyrightable subject matter.

[8] Plaintiffs seek copyright protection for Figures 1-4 and Table 1 of the draft Article submitted to the *New England Journal of Medicine*. (See Pls.' Br. Supp. Mot. Partial Summ., Att. E, Ex. 42.) The four figures employ bar graphs and data points to depict the results of Studies I, IA, II, III, and IV. Table I summarizes the results of several studies. Cyanamid argues the figures and table do not merit copyright protection and therefore summary judgment is appropriate for Cyanamid. I disagree.

"Liability for copyright infringement will only attach where *protected elements* of a copyrighted work are copied." *Gates Rubber Co. v. Bando Chemical Inds., Ltd.*, 9 F.3d 823, 833 (10th Cir.1993) (emphasis in original). In *Feist Publications, Inc. v. Rural Telephone Service Co.*, the Court held "facts are not copyrightable ... compilations of facts generally are." 499 U.S. 340, 344, 111 S.Ct. 1282, 1287, 113 L.Ed.2d 358 (1991). The *Feist* Court after noting that facts are uncopyrightable, discussed the requirement of originality in the compilation of the facts to render such presentation copyrightable:

> As discussed earlier, however, the originality requirement is not particularly stringent. A compiler may settle upon a selection or arrangement that others have used; novelty is not required. Originality requires only that the author make the selection or arrangement independently (i.e., without copying that selection or arrangement from another work), and that it display some minimal level of creativity. Presumably, the vast majority of compilations will pass this test, but not all will. There remains a narrow category of works in **[1402]** which the creative spark is utterly lacking or so trivial as to be virtually nonexistent.

Id. at 358-359, 111 S.Ct. at 1294-95.

Thus the issue is whether Plaintiffs "selected, coordinated, or arranged," (*id.* at 362, 111 S.Ct. at 1296), the facts in an original way. *Feist* stresses "originality is not a strin-

gent standard; it does not require that facts be presented in an innovative or surprising way." (*Id.*) That case concerned whether the white pages of a telephone book were copyrightable. Because the names and numbers were uncopyrightable facts, any copyright could only be based on the "selection, coordination, and arrangement," (*id.*), of those facts. The Court held the preparation of the white pages of a telephone book involved simply taking the data provided by subscribers and listing it alphabetically by surname. "The end product is a garden-variety white pages directory, devoid of even the slightest trace of creativity." (*Id.*) The same cannot be said here.

The authors of the Article selected facts to be presented and coordinated and arranged them in bar chart fashion in the figures and in columned and lined tables in Table I so as to present a considerable amount of information in a small space. There is no doubt that the degree of originality in this "selection, coordination, and arrangement" of facts is in a higher order of magnitude than that involved in listing data in a practically inevitable alphabetical way.

The cases cited by Cyanamid do not persuade me that the authors' compilation in this case did not meet the "minimal level of creativity," (*id.* at 358, 111 S.Ct. at 1294), required by the Court in *Feist*. *See, e.g., Sinai v. Bureau of Automotive Repair*, 25 U.S.P.Q.2d 1809, 1811, 1992 WL 470699 (N.D.Cal.1992) (arrangement of emission control system information in form of columnar grid "neither original nor protectible"); *Victor Lalli Enters. v. Big Red Apple, Inc.*, 936 F.2d 671, 673 (2nd Cir.1991) (charts used in illegal gambling operations in New York City reporting winning numbers on purely functional grids that offered no opportunity for variation, did not meet minimum standards of originality for copyright protection); *Matthew Bender & Co., Inc. v. Kluwer Law Book Publishers, Inc.*, 672 F.Supp. 107, 109-111 (S.D.N.Y.1987) (arrangement of information relating to personal injury and wrongful death awards and settlements in chart lacked a modicum of selectivity precluding the assertion of copyright).

Other cases have reached the contrary conclusion. *See CCC Info. Servs., Inc. v. Maclean Hunter Market Reports, Inc.*, 44 F.3d 61, 67-68 (2nd Cir.1994) (selection and arrangement of data in car valuation guide "displayed amply sufficient originality to pass the low threshold requirement to earn copyright protection"); *Kregos v. Associated Press*, 937 F.2d 700, 710 (2nd Cir.1991) (table showing statistics of baseball pitchers copyrightable because requisite creativity shown in selection of statistics).

I conclude the figures and table in the Article constitute copyrightable subject matter, entitled to protection.

e. Damages.

[9] Cyanamid argues any profits earned by Cyanamid are too attenuated to the alleged infringement to permit an award of such profits to Plaintiffs. Only ownership of the copyright and copying by the defendant are necessary to succeed in an infringement action. Nimmer & Nimmer, *supra*, § 13.01. Therefore, Plaintiffs are entitled to judgment on their copyright claim regardless of whether they can later show damages.

The Copyright Act provides that a plaintiff may recover "actual damages and any additional profits of the infringer." 17 U.S.C. § 504(a)(1). Notably, under the Act, "the copyright owner is required to present proof only of the infringer's gross revenue, and the infringer is required to prove his or her deductible expenses and the elements of profit attributable to factors other than the copyrighted work." *Id.* § 504(b). Moreover, "[a]s long as proximate causation is demonstrated, it would seem that profits 'attributable to the infringement' could include even those attributable only indirectly." Nimmer & Nimmer, *supra*, § 14.03[A]; *see Cream Records, Inc. v. Jos. Schlitz Brewing Co.*, 754 F.2d 826, 828 (9th Cir.1985) (plaintiff awarded some of the defendant's malt liquor sales **[1403]** profits adjudged indirectly attributable to the use of plaintiff's copyrighted music in a commercial.)

Plaintiffs have satisfied the requisite elements of their copyright cause of action against Cyanamid. I therefore

grant summary judgment to Plaintiffs on their fourth cause of action.

5. Misappropriation.

In their fifth claim for relief, Plaintiffs' claim "Cyanamid's actions are likely to cause confusion as to the source of the invention embodied in the reformulated Materna and to damage the reputation of Drs. Allen and Seligman," (Second Am.Compl. 71,) and "constitute misappropriation of Plaintiffs' business value and unfair competition," (*Id.* 72). Plaintiffs accept Cyanamid's characterization of this claim as incorporating two distinct causes of action: defamation and misappropriation of business value (or unfair competition).

a. Defamation.

[10] Plaintiffs elaborate on this claim as follows:

> Cyanamid's actions constitute disparagement and defamation of Drs. Allen and Seligman, in that Cyanamid's filing of the patent naming Dr. Ellenbogen as sole inventor causes the scientific community to believe that Drs. Allen and Seligman merely copied Dr. Ellenbogen's work to prepare the Article and that Drs. Allen and Seligman wrongfully omitted Dr. Ellenbogen as an author on the Article.

(Second Am.Compl. 73.)

[11] Colorado law recognizes two types of libel: libel per se and libel per quod. *Lind v. O'Reilly*, 636 P.2d 1319, 1320-21 (Colo.Ct.App.1981). "A published statement ... is libelous *per se* if it is defamatory on its face, such that no extrinsic evidence is necessary to show either its defamatory nature or that it is of and concerning the plaintiff." *Id.* at 1320 (citations omitted).

Here, the statement not being libel per se, must if libelous be libel per quod and is "actionable only if special damages are pleaded and can be proved." *Id.* Such damages "do not include injuries to a plaintiff's reputation or feelings which do not result in specific monetary loss." (*Id.* at 1321.) Plaintiffs have not pleaded and cannot prove special damages.

Plaintiffs reliance on *Big O Tire Dealers, Inc. v. Goodyear Tire & Rubber Co.*, 408 F.Supp. 1219 (D.Colo.1976), aff'd, 561 F.2d 1365 (10th Cir.1977) is to no avail. There, plaintiff prevailed after a jury trial on claims of trademark infringement and trademark disparagement stemming from Goodyear's use of plaintiff's trademark "BIG FOOT." The trial court denied Goodyear's motions for judgment notwithstanding the verdict or for a new trial, upheld the jury's verdicts, and permitted the award of damages notwithstanding plaintiff's failure to prove special damages. The case at bar does not concern a claim of trademark disparagement; nor does *Big O Tire* alter the requirement under Colorado law of special damages concerning libel per quod.

Accordingly, insofar as this cause of action is for defamation, it must fail.

b. Unfair Competition.

[12] Plaintiffs allege "Cyanamid's actions are likely to cause confusion as to the source of the invention embodied in Materna," (Second Am.Compl. ¶ 71), and that such actions amount to misappropriation of business value and unfair competition, (*id.* ¶ 72). Cyanamid argues Plaintiffs have not adduced any evidence to support their claim.

"The law of unfair competition has its roots in the common-law tort of deceit: its general concern is with protecting consumers from confusion as to source." *Bonito Boats, Inc. v. Thunder Crafts Boats, Inc.*, 489 U.S. 141, 157, 109 S.Ct. 971, 981, 103 L.Ed.2d 118 (1989). Generally, "the common-law tort of unfair competition has been limited to protection against copying of nonfunctional aspects of consumer products which have acquired secondary meaning such that they operate as a designation of source." *Id.* at 158, 109 S.Ct. at 981. Thus, the tort is commonly asserted to protect trade marks and trade names. *See* **[1404]** *Adolph Coors Co. v. A. Genderson & Sons, Inc.* 486 F.Supp. 131, 136 (D.Colo.1980).

Both Plaintiffs and Cyanamid cite *American Television & Communications Corp. v. Manning*, 651 P.2d 440 (Colo.Ct.App.1982) as the leading Colorado case concerning

unfair competition. There, the plaintiffs held the exclusive rights to display programs for Home Box Office ("HBO"). Plaintiff leased to each of its subscribers a special antenna and converter to enable viewing of HBO programs. Defendants installed antennas and converters capable of receiving the HBO signal. The court reversed a denial of a preliminary injunction, finding establishment of the undisputed fact that defendants were wrongfully interfering with plaintiffs' exclusive rights to provide HBO.

Cyanamid contends under Colorado law, the claim for misappropriation of business value envisions a wrongful appropriation by one competitor of the skill or labor of another. I agree. Plaintiffs misread *American Television* in maintaining that the plaintiff and defendant in that case were not competitors. Plaintiffs took no steps to exploit their alleged invention commercially, they were not competitors and, therefore had no business for Cyanamid to misappropriate. Thus, the undisputed facts show no basis for an unfair competition claim.

For these reasons Cyanamid is entitled to judgment on Plaintiffs' misappropriation claim.

6. Breach of Confidentiality Obligation.

[13] Plaintiffs allege: "Cyanamid's actions in distributing the manuscripts furnished on a confidential basis by Dr. Allen to Dr. Ellenbogen constitute breach of the obligation of confidentiality reposed by Dr. Allen and accepted by Dr. Ellenbogen." (Second Am.Compl. 78.)

Cyanamid contends the gravamen of this claim is that Dr. Ellenbogen breached the confidential relationship between himself and Dr. Allen. It correctly notes in Colorado "we do not recognize a separate tort founded upon breach of a confidential relationship." *Bock v. Brody*, 870 P.2d 530, 533 (Colo.App.1993); *see also Todd Holding Co. v. Super Valu Stores, Inc.*, 874 P.2d 402, 403 (Colo.App.1993).

Plaintiffs acknowledge Colorado law does not provide a separate cause of action for breach of a "confidential relationship." They argue, however, "Colorado law does provide

that a confidential relationship may give rise to obligations to maintain information in confidence," (Pls. Br. Opp. Def.'s Mot. Summ.J. at 57), and that the latter obligation is "quite clearly actionable," (*id.*) Neither of the cases cited by Plaintiffs, however, involved a separate claim for breach of confidentiality obligation. *Kodekey Electronics, Inc. v. Mechanex Corp.*, 486 F.2d 449 (10th Cir.1973) concerned trade secrets disclosed in breach of a secrecy agreement signed by defendant. The court held such disclosure constituted unfair competition. It did not recognize a separate tort for breach of confidentiality obligation.

In *Saine v. A.I.A., Inc.*, 582 F.Supp. 1299, 1309 (D.Colo.1984), I denied a motion for more definite statement on a counterclaim based on unfair competition. Defendant alleged plaintiff and a third-party defendant conspired to obtain confidential information from it. These allegations were advanced not in support of a breach of confidentiality obligation but in support of defendant's counterclaim of unfair competition and unfair trade practices.

Because Colorado law does not recognize a separate tort of breach of confidentiality obligation, Cyanamid is entitled to judgment on Plaintiffs' seventh claim for relief.

7. Unjust Enrichment.

[14] In their eighth claim for relief, Plaintiffs allege: "Cyanamid's actions constitute unjust enrichment." Cyanamid contends the undisputed facts mandate summary judgment in its favor on this cause of action.

In *Cablevision of Breckenridge v. Tannhauser Condominium Association*, the Colorado Supreme Court stated in order to recover under a quasi-contract or unjust enrichment theory,

> a plaintiff must show (1) that a benefit was conferred on the defendant by the plaintiff, (2) that the benefit was appreciated by the **[1405]** defendant, and (3) that the benefit was accepted by the defendant under such circumstances that it would be inequitable for it to be retained without payment of

> its value. Application of the doctrine does not depend upon the existence of a contract, express or implied in fact, but on the need to avoid unjust enrichment of the defendant notwithstanding the absence of an actual agreement to pay for the benefit conferred. The scope of this remedy is broad, cutting across both contract and tort law, with its application guided by the underlying principle of avoiding the unjust enrichment of one party at the expense of another.

649 P.2d 1093, 1096-97 (Colo.1982) (en banc) (citations omitted).

In their interrogatory responses, Plaintiffs claim to have conferred two benefits on Cyanamid: (i) the "invention of the reformulation and the communication of such invention" by a March 4, 1980 letter from Dr. Allen to Dr. Ellenbogen, (Def.'s Memo Law Supp. Mot. Summ.J., Thomasch Aff., Ex. 1 at Response No. 1) and (ii) a "Patent monopoly," (*id.* at Response No. 2). Cyanamid maintains neither alleged benefit is sufficient to support Plaintiff's unjust enrichment claim.

Cyanamid claims, to the extent the claim is based on "the invention of the reformulation and the communication of such invention," Plaintiffs have not established that they had any expectation of compensation from the disclosure of information regarding the reformulation. *See Britvar v. Schainuck*, 791 P.2d 1183, 1184-85 (Colo.Ct.App.1989). Cyanamid cites Dr. Allen's testimony that he "did not think that [he] was owed any additional monies for the studies we had performed." (Thomasch Aff., Ex. 6 at 968.) Plaintiffs do not respond to this argument. However, Dr. Allen's comments construed in the light most favorable to Plaintiffs, do not preclude the possibility that, although he expected no further payment for the studies themselves, had he known of Cyanamid's patent application arising from the disclosure, he would have expected additional compensation.

" 'A person confers a benefit upon another if he ... in any way adds to the other's security or advantage.' " *Cablevi-*

sion of Breckenridge, 649 P.2d at 1097 (citing the *Restatement of Restitution § 1*, comment b (1937)). Cyanamid has not established as an undisputed issue of fact that Plaintiffs did not confer a benefit on it by disclosing information concerning the reformulation and that Cyanamid did not inequitably benefit from such disclosure. Therefore, summary judgment on the unjust enrichment claim is denied.

8. Statute of Limitations.

[15] Cyanamid seeks summary judgment on the grounds that each of Plaintiffs' claims is barred by the applicable statute of limitations, none of which provides for a limitation period in excess of four years.

Colorado has adopted a date-of-discovery rule for the purpose of determining when a cause of action accrues. Under this rule, a cause of action typically accrues when the tortious act is discovered or should have been discovered by the exercise of reasonable diligence. *See* Colo.Rev.Stat. § 13-80-108 (1987).

"[T]he focus is on a plaintiff's knowledge of facts which would put a reasonable person on notice of the general nature of damage and that the damage was caused by the wrongful conduct...." *Morris v. Geer*, 720 P.2d 994, 997 (Colo.Ct.App.1986). "The time when a plaintiff discovered, or through the use of reasonable diligence should have discovered, the [wrongful] conduct is normally a question of fact which must be resolved by the trier of fact." Id. "[O]nly in the clearest of cases may a summary judgment motion be granted where discovery of the injury is the pivotal issue." *Mastro v. Brodie*, 682 P.2d 1162, 1169 (Colo.1984) (en banc).

Cyanamid does not contend it is undisputed that Plaintiffs had actual knowledge of their claims at a time that would bar such claims. However, it contends Plaintiffs should have known of the Patent long before August 1989 (four years before this action commenced). In support, Cyanamid relies on the promotions and advertising of the Materna product after the patent issued in **[1406]** February

1984; the Patent label marked on the commercial bottle of Materna;[3] the issuance of the Patent and its recordation in the Patent Office;[4] the Materna entry referencing the patent in the *Physicians Desk Reference* book, copies of which were maintained by the University of Colorado; Drs. Allen and Seligman's continued performance of studies for Cyanamid on Materna both before and after the patent issued; and Dr. Seligman's prescription of Materna after the issue of the patent.

Plaintiffs respond the patent notice was tiny and buried in the Materna label; the Materna labels furnished to Drs. Allen and Seligman were over- stickered with a special "FOR INVESTIGATIONAL USE ONLY" label that did not contain the patent notice; the patent notice merely states "Patented" and gives the United States patent number and could have pertained to any of the ingredients, the manufacturing process or even the packaging; the advertisements referred to by Cyanamid ran a total of four times in Obstetrics and Gynecology, a journal directed toward obstetricians and gynecologists rather than hematologists; Dr. Seligman already knew the content of the Materna he prescribed and therefore had no need to consult the Physicians Desk Reference or label each time he prescribed it.

Viewing the facts in the light most favorable to plaintiffs, they do not establish that Plaintiffs, by the use of reasonable diligence, should have discovered the Patent. This is

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[3] Cyanamid cites *American Medical Systems v. Medical Engineering Corp.*, 6 F.3d 1523, 1537 (Fed.Cir.1993) which held that patent marking in compliance with statute is in rem notice entitling the patentee to recover damages from a patent infringer. As Cyanamid acknowledges, however, no case holds that marking is notice to the world for the purpose of the statute of limitations.

[4] The Supreme Court's dicta in *Sontag Chain Stores Co. v. National Nut Co.*, 310 U.S. 281, 295, 60 S.Ct. 961, 967-68, 84 L.Ed. 1204 (1940) and other cases cited by Cyanamid to the effect that the issuance of a patent is notice to the world for certain purposes, do not support the conclusion that such issuance is notice for all purposes, including the statute of limitations.

not the clearest of cases and therefore summary judgment is not appropriate on the issue of due diligence.

[16] Plaintiffs argue additionally that the statutes of limitations and laches do not run against the University or the Regents as they are part of the State of Colorado. Under the nullum tempus doctrine, statutes of limitation and laches normally do not apply against federal and state entities. *City of Colorado Springs v. Timberlane Assocs.*, 824 P.2d 776, 780 (Colo.1992) (en banc). [5]

Cyanamid responds neither the University nor the Regents has a claim against it because Drs. Allen and Seligman did not follow the University's patent policy and there was no assignment of rights. Further, even if the University had any rights in the alleged invention, Cyanamid contends the University assigned such rights to the Foundation. Because I find factual issues preclude summary judgment on the basis of the applicable statutes of limitations, I do not reach this issue.

IV. *Order.*

IT IS ORDERED THAT Plaintiffs' Motion for Partial Summary Judgment is DENIED on the first and second causes of action and GRANTED on the fourth cause of action;

IT IS FURTHER ORDERED THAT Defendant's Motion for Partial Summary Judgment is DENIED on the fourth cause of action;

IT IS FURTHER ORDERED THAT Defendants' Motion for Summary Judgment is GRANTED on the first, third, fifth and seventh causes of action and DENIED on the second, fourth, sixth and eighth causes of action.

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[5] "The origin of governmental immunity from statutes of limitations is found in the English common law rule of 'nullum tempus occurrit regi,' or, 'time does not run against the king.' " *Colorado Springs v. Timberlane Assocs.*, 824 P.2d 776, 777 (Colo.1992) (en banc) (footnote omitted).

APPENDIX I

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

02-1587

THE UNIVERSITY OF COLORADO FOUNDATION, INC., THE UNIVERSITY OF COLORADO, THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO, ROBERT H. ALLEN, AND PAUL A. SELIGMAN, PLAINTIFFS-APPELLEES,

v.

AMERICAN CYANAMID COMPANY, DEFENDANT-APPELLANT.

ORDER

[2] UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

ORDER

A combined petition for panel rehearing and for rehearing en banc having been filed by the APPELLANT, and a response thereto having been invited by the court and filed by the APPELLEE, and the petition for rehearing having been referred to the panel that. -heard the appeal, and thereafter the petition for rehearing en banc and response having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for panel rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on November 19, 2003.

SCHALL, Circuit Judge, did not participate in the vote.

FOR THE COURT.

/s/
Jan Horbaly
Clerk

Dated: November 12, 2003

STAMP: FILED
U.S. COURT OF APPEALS
FOR THE FEDERAL CIRCUIT
NOV 12, 2003
JAN MORBALY

cc: Daniel J. Thomasch
Mark A. Lemley

UNIVERSITY OF CO V AMER CYANAMID, 02-1587
(DCT - 93-CV-1657)

****

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public record.

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APPENDIX J

[CYANAMID Letterhead]

Date: October 16, 1981

To: DISTRIBUTION

Location:

Copy to: Public Affairs Staff
[Stamp: RECEIVED
Oct 20 1981
L. Ellenbogen, PhD]

From: Mr. R. Schwadron
Location: Wayne
Subject: MATERNA® 1.60 PRESS CONFERENCE

Reference:

Fifteen representatives of the news media attended the press conference to announce the reformulation of MATERNA® 1.60 on October 14 at the Dorset Hotel, New York City.

Of the 15, seven were from medical and pharmaceutical publications. They were: Michael McDermott, CHAIN DRUG REVIEW; Faye Brockman, DRUG STORE NEWS; Judy Chi, DRUG TOPICS; Allen Schwartz, US PHARMACIST; Mary Hale, CONTEMPORARY OB/GYN; Lucy Kavaler, FEMALE PATIENT and Malcolm Manber, MEDICAL WORLD NEWS.

Attendees from lay publications included: Patricia Irens, BABY TALK; Grace Lang, EXPECTING MAGAZINE; Janet King and Bernice Pickett, MOTHER'S MANUAL; Pat Casey, REDBOOK'S YOUNG MOTHER; Wendy Bowis, SELF; Sandy Donahue, VOGUE and Kathy Minton, WORKING MOTHER.

Since many of the publications appear monthly, there will be a long lead time before articles begin to appear. We will keep you informed of all articles as we receive them from our clipping services.

The press conference went quite smoothly with no problems. No embarrassing questions were asked. Dr. Roslyn Alfin-

Slater, Dr. Robert H. Allen and Dr. Roy M. Pitkin, the members of the panel, were pleased with the conference. They seemed to enjoy the question and answer session that followed their presentations. I would recommend using the panelists in the future for Lederle.

Dr. Leon Ellenbogen was outstanding as the panel moderator. He deserves a great deal of credit for a job well done. Not only did Dr. Ellenbogen provide a great deal of information for the press kit and during the question and answer session, but he also handled all the arrangements for putting the panel discussion program together.

[2] The press conference was an excellent first step for presenting the MATERNA story. Additional steps are being taken to keep the news media informed about MATERNA.

Our public relations affiliate in Denver made arrangements for a telephone interview between Dr. Robert H. Allen and the DENVER POST. An article is scheduled to appear either October 15 or October 16.

The MATERNA press kit was mailed to some 300 medical, life style and child care editors of newspapers across the United States. The press kit was also mailed to all appropriate medical and pharmaceutical publications with messenger deliveries to those publications in New York City that did not attend the press conference.

A feature article on MATERNA and prenatal iron supplementation is being prepared for distribution to suburban newspapers nationwide.

There will be another opportunity to present Dr. Allen's findings when he gives his paper, "Inadequate Iron Absorption From Prenatal Multivitamin-Mineral Supplements," at the American Society of Hematology's meeting in San Antonio, Texas, in early December. We will work with our public relations affiliate in Texas to place the story with the wire services during the meeting.

/s/ Bob
Robert Schwadron

RS:asb

DISTRIBUTION

Mr. D. Bethune
L. Ellenbogen, Ph.D.
Mr. R. McLauchlan
Mr. J. Sullivan

[CYANAMID Letterhead]

[Handwriting: Dr. E's File]

To: Mr. J. J. Sullivan

Date: November 4, 1981

Location:

Copy to: Dr. J. B. Johnson
Dr. H. Kiltie
Mr. R. C. McLauchlan
Mr. R. Schwadron

From: Dr. L. Ellenbogen

Location:

Subject: Post MATERNA® 1.60 Press Conference Activities

Reference:

1. *Dr. Robert Allen*
   A. Dr. Allen continues to cooperate with Lederle. He has received several calls about the clinical studies, and, in each instance he has referred them to me; we then follow-up with a letter and notify the medical representative in that area.
   B. He has also agreed to tape a small segment for a radio station in Cleveland on the new MATERNA 1.60.
   C. He has been contacted by a large maternity clinic near Denver, which sees 900 pregnant women each year. This clinic has been using Stuartnatal and have found that 25% of their patients are anemic, despite the fact that the women take the prenatal formulation. They have some hematological data to document this high incidence of anemia. I persuaded him to follow-up. Yesterday, he told me he has agreed to talk to this group on November 20. If this clinic converts to MATERNA 1.60, we will be able to document previous incidence of anemia vs the incidence with MATERNA 1.60.

2. *Publications* (Dr. Allen)

   A. Dr. Allen has almost completed rewriting the manuscript for submission to *Obstetrics and Gynecology*. I have been in contact with him almost daily, reviewing the dosages and he is about to send the publication off to the journal.

   B. Dr. Allen is also preparing his talk before the American Society of Hematology and I am assisting in this respect too. As a member of the American Society of Hematology, I will be present at the meeting. Bob Schwadron is planning to arrange for some press coverage at the meeting.

   [2] Coincidentally, the feature speaker at this year's American Society of Hematology meeting is Dr. C. Finch, internationally known hematologist on iron absorption. Dr. Allen's paper is one of the few that has been chosen for presentation at the meetings. We look forward to additional publicity. I will keep you informed as soon as I return from the meeting (December 5-8).

3. *Babior Study*

   The rate of enrollment of patients is considerably slower than that obtained with our study with non pregnant women. Most of the pregnant women work full time and are reluctant to take one day off for three consecutive weeks despite the offer of $100. In our study of non pregnant women, we of course, used laboratory technicians and the wives of the professors at the University.

   I am, however, in constant contact, almost twice weekly, with the nurse in charge at St. Margaret's Hospital. She is energetic in attempting to convince all the patients to volunteer for the study. We have three patients presently under study.

4. *University of Miami*

   I am leaving Wednesday afternoon to see the Chief of OB/GYN at the University of Miami, Dr. E. Robertson, who is planning to do part of our 1982 study. I will at-

tempt to review the 1982 study with him in more detail and also to see if he can add to the list of volunteers for our single dose study (Babior Study).

5. *Dissolution*

Dr. Lordi at Rutgers University School of Pharmacy will perform the dissolution study. We will pay him $500. I have attempted to explain the urgency to complete the study within two weeks. He has promised he will. Dr. Allen and I feel very strongly that we have an independent confirmation of this dissolution study and we would very much like to present the results at the American Society of Hematology meeting.

6. *Additional Publicity*

A. I gave a five minute interview to WRKL radio station on the new MATERNA 1.60 and it was played on a news program last week. Bob Schwadron has also contacted WGRC, the other Rockland County station who wants to discuss [3] MATERNA 1.60 with me and will play a 1/2 hour segment talk show on Sunday Morning, November 15. I plan to have the interview taped with the radio station on November 9 or 10. The interview will highlight the new MATERNA 1.60 as well as other aspects of vitamin research.

B. Dr. Judith Stern, a close colleague of mine, at the University of California at Davis, and an internationally known nutritionist occasionally is asked to write for women's magazines, such as *Vogue*, *Family Circle*, etc. I have sent her a copy of the press booklet in New York and have educated her about our complete study. She is most willing and will try to write an article for one of the ladies magazines also emphasizing our new MATERNA 1.60.

C. Dr. Allen has also agreed to write an article for the magazine *Working Mother* at the request of the magazine, however, he has asked me to ghost write

a draft for him. He has also asked for a small sum of money for his efforts. He has agreed to $250.

/s/Leon
Leon Ellenbogen. Ph.D.

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